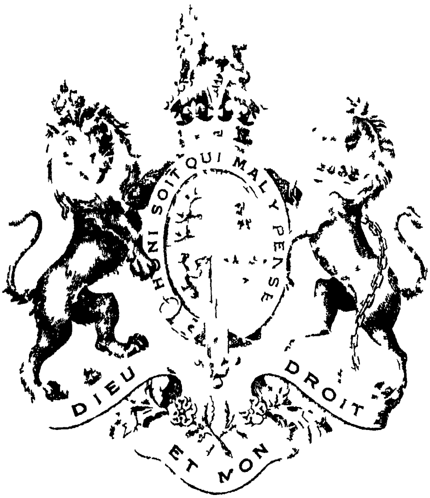

HONI SOIT QUI MAL Y PENSE
DIEU ET MON DROIT

Agricultural Research Institute
PUSA

JOURNAL & PROCEEDINGS

OF THE

ASIATIC SOCIETY OF BENGAL.

New Series, Vol XIV

1918

CALCUTTA

PRINTED AT THE BAPTIST MISSION PRESS, AND PUBLISHED BY
THE ASIATIC SOCIETY, 1, PARK STREET, CALCUTTA.
1919

DATES OF PUBLICATION.

Journal	Nos. 1 & 2	pp	1-241	Proceedings	pp.	*Nil*	May,	1918
,,	No. 3	,,	243-67	,,	,,	,,	,,	,,
,,	No. 4	,,	*Nil*	,,	,,	i-lxxiv	,,	,,
,,	No. 5	,,	269-378	,,	,,	*Nil*	July,	1918
,,	No. 6	,,	*Nil*	,,	,,	lxxv-clxxxviii	Aug.,	,,
,,	No. 7	,,	379-432	,,	,,	clxxxix-cxcviii	Oct.	,,
,,	No. 8	,,	433-55	,,	,,	cxcix-ccclvi	Feb.,	1919
,,	No. 9	,,	457-76	,,	,,	ccclvii-ccclxxii	April,	,,

(Volume complete in 8 issues.)

DIRECTIONS FOR BINDING.

The pages of the Journal should be bound first after the Contents: they are numbered in Arabic numerals. The pages of the Proceedings should follow them: they are paged consecutively in Roman numerals. The Index is paged in continuation of the Proceedings.

Plates	i-ii	to follow	page	252
,,	iii-iv	,,	,,	337
,,	v-x	,,	,,	clxvi
,,	xi	,,	,,	397
,,	xii	,,	,,	462

CONTENTS

PAPERS

[JOURNAL AND PROCEEDINGS]

Page

'Abdu'l Wali, Maulavi

The spelling of Babar's name 453

Annandale, N.

A Bismer Weighing-Beam from the Darjeeling District 243
Note on the Taxonomic position of the Genus *Camptoceras*, Benson and of *Lithotis japonica*, Preston (*Mollusca Pulmonata*). 457
See also Prashad.

Beveridge, H.

The Rauẓat-uṭ-Tahirīn 269
The Sources of the Akbarnama 469

Bhattacharya, D. C.

Bhavabhūti as a Mīmāṁsaka 245

Bhattacharya, D. R.

Notes on the Anatomy of a Double Monstrosity in the Chick . 333

Brown, C. J.

Some remarks on Mr. Hodivalā's article on certain Mughal mints 264

Brunetti, E.

Review of Progress in our knowledge of Oriental Diptera during the last two decades ccclviii

Chakravarti, S.

On the Pressure of Light 425
See also Saha.

Chaudhuri, B. L.

Presidential Address, Indian Science Congress (1918) —Zoology and Ethnography cxxxviii

Coleman, L. C.

Presidential Address, Indian Science Congress (1918)—Agriculture cii

Cotter, G. de P.

The Geotectonics of the Tertiary Irrawaddy Basin . 409

Firminger, Walter K.

The Malda Diary and Consultations (1680–82) .. ..

Page

FISCHER, C.
Preliminary Note on the flora of the Anamalais 379

HAIG, T. W.
The poet Shaikh Mufakhkhar-al-dīn Āzarī of Isfarāyin .. 463

HAYDEN, H. H.
Annual Address, As. Soc. Beng. (1918) xviii

HODĪVĀLĀ, S. H.
The Mandū gold couplet 339
The Katak rupees of Aḥmad Shāh 341
Notes and suggestions about some unassigned or doubtful Mughal mints 344

HOLE, R. S.
Presidential Address, Indian Science Congress (1918)—Botany clvi*

LAW, B. C.
A short account of the Wandering Teachers at the time of the Buddha 399

McKERRAL, A.
The Burmese sesamum varieties: Notes on their variation and growth 389

MEHTA, K. C
Some observations and experiments on the rust on Launæa aspleniifolia, DC. 247

MOHAMMAD, WALI
Presidential Address, Indian Science Congress (1918)—Physics and Mathematics cxvi

NEVILL, H.
An unpublished mint of Aurangzeb 261
Some rare Mughal coins 473

PARUCK, F. D. J.
Two rare Sāsānian drachmes 253
A correction note on "A gold coin of the Sāsānian king Shāpur the Great" 255
The rare Sāsānian Mint KVI BBA or KVN BBA 256
A rare type of drachme of Shāpur II 262
Novelties in Parthian coins 372

PINFOLD, E. S.
Presidential Address, Indian Science Congress (1918)—Geology clxxiii

PRASHAD, B.
Note on the taxonomic position of the Genus *Camptoceras*, Benson and of *Lithotis japonica*, Preston 457
See also ANNANDALE.

Page

RAKSHIT, JITENDRA NATH
The Isolation of Porphyroxine 407

SAHA, M. N.
On a new theorem in Elasticity 421
On the Pressure of Light 425
See also CHAKRAVARTI.

SUBOOR, M. A.
The Lakhnau mint on a gold coin of Aurangzeb 262

SUHRAWARDY, A.
Notes on important Arabic and Persian manuscripts found in various Libraries in India cxcix

VIDYABHUṢAṆA, S. C.
The Tattvacintāmaṇi, a most advanced work on Hindu Logic 279

VREDENBURG, E.
Considerations regarding a possible relationship between the Charnockites and the Dharwars 433
Notes on the occurrence of *Dolium variegatum* Lamarck at Maskat, with considerations on its geographical distribution at the present day and in former geological times .. 449

WALKER, G. T.
Presidential Address, Indian Science Congress (1918) .. lxxv

WHITTELL, H. M.
The Reign of Alau-d-dīn Bahman S͟hāh 475

OFFICIAL MATTER

[PROCEEDINGS]

Proceedings, Annual Meeting, 1918 i
Annual Report for 1917 ii
Elections for 1918 xxiv
List of Members xxvii
List of Officers and Members of Council xxviii
List of Ordinary Members xxix
List of Special Honorary Centenary Members • xlvii
List of Honorary Fellows xlvii
List of Fellows xlviii
List of Associate Members xlix
Absent Members l
Loss of Members li
Elliott Gold Medal and Cash lii
Barclay Memorial Medal liii
Receipts and Disbursements, 1917 lv
Proceedings of the Fifth Indian Science Congress, Lahore .. lxxv
Proceedings, Ordinary General Meetings
    February—August, 1918 clxxxix
    November—December, 1918 ccclvii

JOURNAL

OF THE

ASIATIC SOCIETY OF BENGAL.

New Series.

Vol. XIV.—1918.

◆

The Malda Diary and Consultations (1680-1682).

Edited by WALTER K. FIRMINGER, B.D., B. LIT, *Archdeacon of Calcutta, Editor of "Bengal: Past and Present,"* 1909-17

INTRODUCTION.

The town of Malda is situated close to the *muhānā*, or conflux, of the rivers Kālindri and Mahānandā. "The Towne," writes Edwards, "is small, but conveniently seated on a branch of the Ganges, and a small river from Morung [i.e. the Nepalese *tarai*] which joyne a little above the Towne, which is of great resort. being the staple of cloth. etc., for that part of the Countrey, and comes in from all parts within thirty or forty myles." In ancient times the Ganges in full pride flowed through or close by the mighty city of Gaur, but riparian changes led to Malda becoming the port for both Gaur and Pandua. The Phuti ["cracked"] Mosque, according to its inscription, is dated 11th S̲hawal, 900H. [8th July 1495 A.D.], in the reign of Husain S̲hah.[1] The picturesque ruins of the Kātlā, or fortified caravanserai, for the better protection of the valuable goods of itinerant merchants, remain to bear witness to the great days of old Malda.

In October 1676, Streynsham Master, being at that time at Kasimbazar, records in his Diary: "Mr. Richard Edwards, being now goeing with the Honourable Companeys treasure to the mint at Rajamaull,[1] It is thought fitt that, as soone as he shall put that business in a good forwardness, he doe make a Step over to Maulda to lay out the sume in all sorts of goods before mentioned, and to informe himself well of the manner of the trade in the place, and to give the Councell an account thereof in writeing......and, by reason of Mauldas neare sittuation to Rajamaull, The Councell are of opinion that it will be a great convenience to the Honourable Companyes affairs to consigne the treasure (which is usually sent hence to Rajamaull) to that Factory to be minted and sould under their charge and care."[2]

---

[1] See Manomohan Chakravarti: "Notes on Gaur," etc.: *Journal and Proceedings, Asiatic Society of Bengal*, vol. v, no. 7 [July 1909]. See Abid Ali Khan: *Short Notes on the Ancient Monuments of Gaur and Pundua* [Malda, 1913].

On December 6th, 1676, Edwards writes:—

> "The Towne is small, but conveniently seated on a branch of the Ganges and a small river from Morung which joyne a little above the Towne, which is of great resort, being the staple of cloth etc., for that part of the Countrey; and comes in from all parts within thirty or forty myles. The chiefe trade driven there is by Factors of Agra, Guzzaratt, and Bannaras Merchants, who yearly send them from fifteen to twenty-five Pattelaes, whose ladeing consists of Cossaes, and Mullmulls from 1½ Rupees to five rupees per piece, and mundeels and Elatches of all sorts, valued at about one Lack each Pattella, and about half that amount by landing said goods and raw silk (in goodness inferiour to that procured about Cassambazar). What goes by land is sent hence in Aprill or May, and that by water as soone as the river begins to fall, which is usually about the latter end of August, and in September; and about three Lack of Rupees yearly goes to Dacca in Elaches and course cloth, and about the same value to petty merchants of Rajamaull and Muxadevad and other places below. The weavers very willingly ingage in any new sort of worke, either of white cloth or silk of different Lengths, breadths, fineness, colour, or stripe, is bespoake. Elce for the usual vend of the place they seldom exceed 36: Covids long and two Ditto broad, and 5: rupees price for Cossaes and Mullmulls, and 15 Covids long and 1½ broad Elatches to 4: rupees price: Ditto of nine Covids long and one and halfe broad to 2: rupees 8. annaes; and Soosyes and Chundenyes of 15: Covids long, 1½ broad, to three rupees to the finer and Larger sorts. Money is given out by the merchants, but indeed cheifly by the Dutch, who first brought them to 40 Covids Long and 2¼ Ditto broad and

---

[1] Rājmahāl. Mānsingh in 1595-6 had established his capital at this place and named it Akbar-nagar. About 1612 Islām Khān removed the capital to Dacca. Prince Shāh Shuja moved the capital back to Rājmahāl, but in 1659 Mīr Jumla returned to Dacca.

[2] Temple: I. 398-9

from 6 to 11 rupees, and now to 40 Covids long and three broad from 9 to 15: per peice, Cossaes and Mullmulls, and used to carry on their Investments all the yeare, but cheifly from February to September; and what merchants give out money doe it the same time alsoe, but the Factors above mentioned, who make most considerable part of the trade, buy all in with ready money, and beging [begin] at the same season somewhat latter or thereabouts, but to be ready about the fall of the river. The greatest Investment the Dutch hath made there was 50,000 rupees. Neither Hummums, Baftas nor Checklas are made there, but at Seerpoore Merchua, soe that sent noe samples of them, being not many procurable, and those that are, very deare, and indeed soe are most of the samples now sent, they being of those sorts the Dutch buy and not common to that markett; soe that, upon giveing out money, I believe they would come to 8: or 10: per Cent cheaper, The merchant of whom [I] bought these hath by him a parcell of cloth which beleive would afford cheaper, The Dutch havinge upon a quarrell betwixt them and their merchants turned them upon his hands againe, who will hardly find any chapman[1] for them but we or they: the quantity and contents as followeth

		Rupees.	
150:	peices of Cossaes, 40: Covids Long, 3: Dto. broad	13: to	14:
50:	peices Dto.	11½	12½
25:	peices Dto.	10:	11:
100:	peices Dto. 40. Covids long 2½ Dto. broad ..	9:	10:
50:	peices Dto.	7½	8½
50:	peices Dto.	6¾	7½
400:	peices Dto. 35: Covids long 1¾ Dto. broad ..	5:	7
300:	peices Mullmulls 36 Covids long, 2: Dto. broad	5:	7:

"I have sent each sort of the musters 6: peices, except three which I cannot tell whether fitt for England, and therefore bought noe more than two peices each, Vizt., Adathyes, Elatches, Nehalleum, and Mundeels, which last are much in request for Persia. The vend of imported goods is very inconsiderable, some small quantityes of Pepper, Copper, Tynn, Tuttenagg may goe off, but they usually supply themselves from Sudelapore, which is about four or five myles distance. Saltpeter there is made in or night [*sic*] that place, and I conceive the Countrey not fit for it, being low and marish and full of Tancks."........[2]

It was not until April, 1680 that an attempt was made to found a permanent settlement at Malda. The Diary commences with the arrival in sight of Malda, on Thursday, April 22nd, 1680, of the Worshipful Matthias Vincent, Chief for the Honourable East India Company's affairs of the Bay of Bengal,[1] Mr. Edward Littleton,[2] Chief of Kasimbazar, Mr. Fytche Nedham,[3] designed Cheife of this new Factory and Mr. Jonathan Prickman, 3rd.

---

[1] Broker.

[2] Temple: I. 399-401.

Fytche Nedham, the First Chief of Malda, had originally been selected in 1671 for Siam, but had been transferred to Fort St. George, and thence, in 1676, to Bengal, where, in November of that year, he had been appointed Second at Dacca by Streynsham Master. In October, 1678 he succeeded as Second at Balasor, Edward Littleton who had been promoted to be Chief of that place, and on the 21st of February he married Miss Ann Littleton, his Chief's sister.

Mr. Richard Trenchfield,[4] the Second, did not arrive till June 16th, when he accompanied Mrs. Nedham and Mrs. Mary Cole from Kasimbazar to Malda.

The volume of old records we are concerned with exhibits, in a very lucid light, the condition of Bengal in the days when Shāistāh Khan reigned at Dacca as Sūbadār of Bengal. From the *Diary* we learn that Malda "is the Nabob's Jaggeer and is rented of him by Hernaraine, Congoy of Bengall." This statement is of great importance as explaining many, though, of course, not all, of the troubles experienced by the English Factors. The Mughal habit of farming out taxes and imposts of all kinds was bound to make exactions sufficientte grievous in themselves, absolutely intolerable,[5] and, by substituting the farmer for a lawfully constituted and responsible servant of the Imperial Government, to render the administration of justice simply impossible.

The English commenced their business at Malda in 1680 in a hired house "of brick, but very much out of repair, and the rooms being for blackness and darkness more like dungeons than dwelling houses." This house was within the town. In December they decided to buy from Rajaray Chowdry "a piece of his land lying on the other side the River about 2 little miles distant from Maulda." Here we have the origin of the present civil station of Malda—"English Bazar," or "Englezavad" as the Factors called it. The *Diary* shows that the Factors intended their home to be a place of defence. Timbers for the building were brought down from the Morung, and, alas, the mighty buildings of Gaur were made to contribute bricks and pillars.

---

[1] See biographical notice. Temple . ii. 339*n*. See also Yule: *Hedges' Diary*, vol II, pp. 290-2. Knighted in 1685 and died 1688.

[2] See biographical notice. Temple: II. 306*n*. In 1683, Littleton returned to England, having been dismissed for dealings with the "interlopers." In 1699 he came out as President of the New Company. Died 24th October 1707. See Wilson: *Early Annals*, vol. I, p. 154 *et seq.*

[3] See biographical notices, Temple: II. 119 and p. 343.

[4] See biographical notices, Temple: II. 284*n*. Yule: *Hedges' Diary*, vol ii, pp. 285-289. His first wife was a sister of the famous Chaplain (later Bishop) John Evans.

[5] Clavell in an "Accompt of the Trade of Hugly," dated December 15th, 1676, writes that as long as Hughli "continued thus governed by the Moors, justice was more exactly administered and complaints made against the King's officers took place, porticularly in the favour of strangers. But since the year 1663 or thereabouts that Nabob Shasti Ckaun [Shāistāh Khān], the present kings uncle became Suba or Vice Roy of Bengale and obtained Hugly as part of his Jaggere (or lands assigned him for his person), his servants being made soe far Governours as to receive all the rents, profitts, perquisites, fines, customs, etc., of the place, the Kings

Even the expert student of Indian commercial history may, perhaps, find the frequent enumeration of piece-goods somewhat wearisome, but the record is relieved by instances of the really marvellous courage and patient fidelity on the part of the ancient factors. Such men are very different from "the trader meek and tame" with "timid foot" whom Rudyard Kipling has sung of in his altogether unfortunate verses anent the foundation of Calcutta.

The references to the Dutch, who had preceded the English in this part of Bengal, as well as in most other parts, are most interesting. One would naturally expect to find between Europeans living close to each other in such circumstances a certain amount of almost boisterous conviviality mingled with the inevitable misgivings of commercial rivals in a warfare, which, on either side, must have been regarded as a matter of success or extinction.

The reader will trace throughout the *Diary* the gathering of the storm which led to the flight of the English merchants from Bengal in 1686. Aurangzeb's public policy of inflicting the jazia or poll-tax on "infidels" comes gradually into view.

Recalled from Malda in August 1682, Fytche Nedham died

Governours hath little more than the name, and for the most part sits still whilst the Nabobs Officers oppress the people, manopolize most commodityes, even as low as grass for Beasts, canes, firewood, thatch, etc., nor doe they want wayes to oppress these people of all sorts who trade, whether natives or strangers, since whatever they doe, when complained of to Dacca, is palliated under the name and colour of the Nabobs interest: and that the Nabobs officers may, without controule, drive the trade of the place, there is sent from Dacca, or detained out of the rents, twenty or forty thousand Rupees yearly to be employed in Merchandize, which is distributed amongst the Hindu Merchants of the Towne, to each in proportion, for which they agree to give twenty-five per 100 per annum, but are called upon at six or eight months end to make up those accompts and to pay the principall with advance of a yeare, by which means, calling in their principall and Interest so often, it sometimes happens that the Merchants pay 50 per 100 to the Nabob and Governours per annum, draineing themselves by this unhappy trade with him and his Minnisters of the whole advantage they make of their other Traffick. And yett, as if this were not enought to impoverish them, the Governour, whenever he hath any goods on his hands calls for them, and distributes amongst them what quantity he pleaseth, at 10 to 15: per 100: higher than the marketts for time, and they pay ready money." Temple: II. 80.

at Hijli in 1686. His wife, mentioned in the *Diary*, had died at Hughli, eleven days after the birth of a son, on October 1st, 1681. Sir Richard Carnac Temple has traced Trenchfield's death as having occurred at Madras on October 3rd, 1699. Prickman died before the copying out of the Consultations for November, 1682, in January 1683 Samuel Anthony died of fever on April 23rd, 1683.

In the Record Department of the India Office there are two bound volumes of Malda Factory Records. Of these the earliest is now published. It consists of three diaries bound together. The first is entitled "Maulda Diary and Consultation Book" and covers the period April to November 1680 during which Nedham and his assistants carried on business in the hired house at Malda. The second part, "Maulda and Englezavad Diary" (December 1680 to November 1681) begins with the purchase of land "two little mile distant from Maulda" and ends before the completion of the new building. The third part, "Maulda and Englezavad Diary," (December 1681 to November 1682) chronicles events during, and subsequent to, the completion of the Company's house at English Bazar.

The transcription has been made for the Editor by a lady who has won for herself a very considerable reputation both for scientific accuracy and for her great knowledge of the period to which these records belong—Miss L. M Anstey.

The Editor has availed himself of the rich stores of information provided by Sir Richard Carnac Temple's *Diaries of Streynsham Master* in the Indian Records Series —a work referred to in the present publication as "Temple." He must take this opportunity of expressing his gratitude to Mr. William Foster, C.I.E., to Mr J Ray I.C.S., to the Rev. A. C. Ridsdale, to Babu Kiran Nath Dhar, M.A., and to Babu Rakhal Das Banerji, M.A., for their generous assistance.

The Glossary is intended to render the text intelligible to the average reader in England. The learned authors of the article "Piece Goods" in *Hobson-Jobson* remark as to the incomplete list of terms given by them, "it is not in our power to explain their peculiarities, except in a very few cases." The present writer is no better situated.

In the Index I have given a number of transliterations, but transliterations are apt to be misleading. For instance, to substitute "Balasor" for the old-fashioned "Ballasore" may be well enough, but "Baleshwar" would throw genuine light on the meaning of the name. I notice that some of our friends in England write "Barhampur" for Berhampur in Bengal, but is not the place the town of Bairam ?

SHILLONG : WALTER K. FIRMINGER.
St. Peter's Day, 1916

NOTE.

The following works are thus referred to :—

The Diaries of Streynsham Master, 1675-1680. Edited by Sir Richard Carnac Temple, Bart., C I.E. 2 vols. (Indian Records Series). London, 1911. **Temple.**

The Diary of William Hedges, Esq (afterwards Sir William Hedges), during his Agency in Bengal. Transcribed for the Press, with Introductory Notes, etc., by R. Barlow. Esq., and illustrated by copious extracts from unpublished records, etc. by Colonel Henry Yule, R E., C.B., LL.D. (Hakluyt Society). 3 vols. London, 1887-9. **Yule**

Hobson-Jobson: a Glossary of Colloquial Anglo-Indian Words, etc. By Col Henry Yule, R.E., C.B., and A. C. Burnell, Ph.D., C.I.E. New edition edited by William Crooke, B.A. London, 1903. **Hobson-Jobson.**

A Glossary of Judicial and Revenue Terms and of Useful Words occurring in Official Documents. By H. H Wilson, M.A., F.R.S. London, 1855. **Wilson.**

MAULDA DIARY AND CONSULTATION BOOKE COMMENCEING APRIL 22ND 1680: ENDING NOVEMBER 29TH 1680.

FOR ENGLAND.

PER EAGLE AND OPENED IN COURT 22ND FEBRUARY 1681/2.

Maulda Aprill 1680.

THURSDAY. Arrived at Mirzapore. The Duch came. His Worship &ca., went to Maulda.

22 ABOUT noone the Worshipfull Matthias Vincent Cheife for the Honorable East India Company's Affaires of the Bay of Bengall, and Mr. Edward Littleton Cheife of Cassambuzar; Mr. Fytch Nedham designed Cheife of this new Factory and Mr. Jonathan Prickman 3d: and 5 others belonging to his Worship arrived at Mirzapore in sight of Maulda where the Duch meeting us at the water Side came on board his Worship budgaroe who after some discourse, our Tent being pitched came on Shoare and in the evening his Worship &ca., went to Maulda to hire a house for our residence till our Factory shall be built but could meet with none fitting.

Vowed the Country.

23 HIS WORSHIP &ca., went to veiw the country about Maulda to hire a house but found none to our minds.

Hired a house.

24 HYRED a house in the towne of Maulda being appartments one 7rs. one at $4\frac{3}{4}$: and the other at $1\frac{1}{2}$ Per month.

Came to the house.

26 WEE left the Tents and came to the Hyred house.

The Cozzees Gomausta came.

27 THE COZZEES GOMAUSTAH came to complement and bid us welcome to Maulda in his Masters name.

The Governers came to visit.

28 THE FOUSDAR of this place RAMABEAGE and the Crowry JAMESHIREBEAGE came to visit his Worship bidding us welcome to towne promiseing all favour in theire power.

His Worship visited the Governors and the Duch.

29 HIS WORSHIP Mr. Edward Littleton and Mr. Nedham vizited the Fousdar and Crowry of Maulda presenting each of them 11rs: Alsoe went to the Duch where met with very sivill entertainment.

At a Consultation.

Present.

Mr. Matthias Vincent Chiefe.
Mr. Edward Littleton.
Mr. Fytche Nedham.

Agreed with the weavers.

The Weavers of this towne haveing yesterday and today been caled and severall Musters of Stuffs of this manufacturee required by our Masters looked upon wee at last came to an Agreement for them on the underspecifyed termes Vizt

	rs.	a.	
Chandenees Per a Muster at ..	6	0	Per ps
Sozzies or Orungshyes	4	12	Per ps.
Elatches	9	0	Per ps.
Nehallewars	4	8	Per ps.
Charconnaes	3	8	Per ps.
Suckerchinnes	8	0	Per ps.

Nehallawars to be striped long wayes.

Allowance to be given or an abatement to be made.

the ground to be according to the said Muster except of the Nehallewars which is agreed to be Striped the long wayes and to be the Severall lengths enordered by the Honourable Company and tis agreed that if they be made better then the Muster that allowance shall be given and if worse abatement made accordingly from the price agreed upon by Mustar and that about rupees 15,000 be imprested thereon.

Impossible to make the Mundeels as enordered.

Musters to be made and sent home with advice.

THE MUNDEELS whoes stripe the Company have ordered to be made long wayes wee on talking with the brokers and weavers find not possible to be done for then the Silke that now is the wooving and occations the shart Stripe by covering the cotton warp must bee in the warp by which meanes as was demonstrated to us the Mundeell will become a Slight Elatcha and retaine nothing of its lively colour and glossiness wherefore it is thought fitt not to alter them yet without order two or three musters to be made of them in the same nature as now they onely to be 2¼ covets broad to be sent home with advice that if that or greater or less breadth will serve for the uses of Europe that then they shall be sent and that they cannot be made as enordered.

Tanjeebs and Mulmulls besides what may be gott in towne as well as of Seerbunds and Wanges haveing been found to be made in great quantities here about in a day or 2: Journy in the Severall

Goods found to come out cheaper here then at Dacca.

ajacenies of this place nearer then which few or none are made about Dacca and haveing good grounds to judge that those goods must come much cheaper here then there where such constant imposts are layd on the brokers picars and weavers not practised here as alsoe hopeing in time as at Cassambuzar wee now doe and impossible ever to be done at Dacca by reason of the Nabobs &ca. great peons constant residence there who will always take the brokers parts by whome they receive proffit wee say hopeing in time to be able to put by the broakers and to come to deale Imediately with the weavers ourselves which will be very advantagious to our Masters trade in these parts wee resolved and thought fitt to make the whole Investment of Cossaes and Mullmulls in this Factory haveing in our ey the order left herein by consultation when the Agent and Councell were here whereby it was agreed that noe cloth should be made at Dacca which could be procured elsewhere.

The whole Investment of Cossaes and Mullmulls to be made here.

Mr. Nedham and 1: more to goe to Shabazpore and its adjacencies

Mr. Fytche Nedham therefore who is made Cheife of this Factory is ordered as soone as he &ca. have given out an Imprest on the above specyfied goods that he with one more of Councell proceed to Shabazpore and its adjacenties (which ley about a day and a halfes Journy from this place) and there give out an Imprest on Cossaes and Mullmulls such as the Company require useing all caution therein that noe damage accrue to our Masters thereby either by bad debts or otherwise to the manufacture the Cheife himselfe might have gone but that dayly news comes of fresh troubles given us in Hugly by Alle Nucky on Account the 15.000: rupees of Hodge Mahmut the princes Duan formerly forced on him at Dacca and from him againe the latter end of the last yeare.

The Investment of Hummums and Adaties to be made at Seerpore.

The Investment of Hummums since they are made in the same place where our China Silke is bought in Seerpore and its adjacenties as alsoe the Adaty (Muster whereof came out of England the last yeare) wee judge best that mony be imprested on both them from Cossambuzar tó the same person that buys the China white Silke he being one well versed in the severall manufacturees of that part of the Country. Bobboo Ray our Vaqueell who being a Jentue is found not soe fitt for that employment in Hugly the Government

Bobboo Ray to remaine Maulda Vaqueell.

there slighting the Jentues more then in other parts they doe wee thinke fitt to leave here in that Imployment and to be encouraged therein soe long as he carryes himselfe well.

The orders and directions left by the Agent delivered to Mr. Nedham and complyance therewith requir-ed.

THE orders and directions for this factory (left us by the Agent and Councell last yeare) was delivered to Mr Nedham and he required to observe the same regulateing affaires here in this Factory agreeable thereunto the Severall papers were delivered him Vizt. 2 Consultations of the 3d: and 4: November 1676 with one coppy of a Consultation of the 12· December last for regulateing of the Companys affaires in Bengall and one originall order for Civill Government in theire Factory and complyance therewith required.

The building of the Factory left to the Cheife &ca.

THE building the new Factory house in this place is left to the Cheife and Councell here to be done with all due conveniency and with as much frugallity as possibly they can.

Agreed to present the governors.

AND tis agreed that a present in broad cloth and rarities be presented to the Fousdar and Crowry in this place to the amount of about 100: rupees each a day or soe before the Cheife leaves this place·

MATHEW SHEPPARD
Secretary.

MATTS. VINCENT.
EDWARD LITTLETON
FYTCHE NEDHAM.

CASSUMBUZAR November 3d 1676:

At a Consultation

Present

Streynsham Master Esqr

Mr Walter Clavell	Mr John Marshall.
Mr Matthias Vincent	Mr Edward Littleton
Mr Edward Reade.	Mr Samuel Hervy.

Proceeded to regulate Affaires

THE Councell proceeded to regulate and sett in order the Honourable Companyes affaires in the Bay of Bengall according unto Mr. Master Commission and Instructions.

Printed orders to be hung up.

FIRST: The printed directions made by the Court of Committee in London the ·18: December 1667 for the Christian and sober Comportment of all the Honourable Companyes Servants was delivered and ordered to be hung up in the Delawnes or dyeing roomes and recommended to be carefully observed.

Orders delivered.

Secondly. The printed rules and orders for the mannagement of the Honourable Companyes affaires and keeping theire bookes was delivered and recommended to due observance for the future in such things wherein the Honourable Company by latter orders have not directed otherwise.

Concerning the Accompts it was directed as followeth:

The Surrat method to be used in booke keeping.

The paper of proposalls upon which the Accompts of Surrat where first altered put and in the Method there used was read and alterations made therein suitable to the Factoryes in the Bay which paper is to be entred in this Consultation booke and directed to be observed in keeping the Accompts in all the Factoryes alsoe a Coppy of a paire of Surrat bookes Letter M: were delivered to remaine in the Bay for the better explaining of the said Method :

The booke keeper to signe the bookes

That in the titles of the Journalls it be exprest who is Chiefe and by whome the bookes are kept and at the end of the Journall and Leadgers the persons by whome they are kept doe set his firme and the Cheife to signe them as approved by him :

Journall parcells to be more largly exprest

Orders for remitting of mony.

That the Journall parcells be more largly exprest then have been used and each perticular place and person duely charged with and Credited for all goods and monyes to or from which the same are Imediately sent or received and those Accompts cleered at the close of the bookes as they ought to bee that is to Say if mony be remitted from Cassambuzar to Pattana the Cassambuzar bookes must charge Pattana and not Hugly for the same and the Pattana bookes must Credit Cassambuzar and cleere that Accompt by Hugly Accompt Currant upon the close of theire bookes and the like in other cases.

Accompt Sallary to be cleered as directed in the printed orders.

The Accompt Sallary to be entred yearly in the bookes upon Lady Day and cleer[ed] or wrot off according to the directions in the printed rules :

The whole charge of the Factory to be charged upon each sort of goods.

That in drawing up the Invoyces the whole charge of the Factory be charged proportionably upon each sort of goods as can nearest be calculated and in the bookes the goods be made Debtor for the same and the Accompt of charges Generall Creditor and all the perticular Accompts of charges as sallary, Dyet, presents, Intrest &ca. to bee cleered by proffit and loss. The Durbar charges of Dacca being an expence which relates

The foote of charges generall to be cleered by proffitt and loss.
Dacca Durbar charges to be cleered by Accompt Current Hugly.
Accompt of packing stuff to be kept distinct.

to all the Investment in the Bay to be cleered in that Factory booke by theire Accompt Current Hugly and soe well that as all the charges of the Factory at Hugly to be proportionable charged upon the whole Investment in the Bay:

THAT Accompt of packing stuff be kept distinctly in the bookes and debited for what is bought for that and each perticular sort of goods to be charged proportionable upon each parcell for what is used in embaleing and packing and what is over or under by reason of calculation that must be used to be cleered by proffit and loss:

Each sort of goods to be made Dr. for its proper charge.

Alsoe each perticular sort of goods to be made Debtor for its proper charge of cureing &ca. and all the perticulars expresly to be entred in the Journall:

All goods to be entred as they are agreed for.

And all goods bought and sold are to be entred in the Journall parcells according as they were agreed and contracted for and the said parcells to abate or deduct the allowance of mony or weight or what ever the nature of the Bargaine is or is accustomed and not to enter the net cost of the goods those allowances being first deducted or abated and not expressing the same·

All accompts to be compleated within the month.

All accompts of cash the warehouse and charges to be monthly stated and adjusted in the bookes and they constantly compleated with the month.

Noe goods to be delivered but by the Cheifes order.

THE WAREHOUSKEEPER not to deliver any goods but according to Consultation or by the order of the Cheife in writeing which shall be the Seconds vouchers for the entring the same in the bookes:

Bills to be drawn on the Cash keeper.

FOR all monyes paid out of cash is thought convenient that according to the Custome used at Surrat, the Second or booke keeper doe draw a bill on the Cash keeper in the which he is to express the parties name to whome and the Accompt upon which the mony is payable which bill the second is first to Subscribe leaveing place for the Cheife and the Cheife haveing signed it the mony to be paid accordingly the Cheife or cash keeper takeing a receit for the same and if theire be mony to be sent for Inland Investments to take attestation of 2: of the Companyes servants of the delivery of the same and the said bill and attestations to be read and passed in Councell every weeke and then noted in the Consultation booke:

To tak[e] attestation for all monyes sent to the Inland Factoryes.

AND where monyes are dayly issued out for

To enter the summes issued out for investments in the Dyary.

Investments as at Cassambuzar to the weavers for Taffatyes the Cheife or Cash keeper shall there enter the summes in the Dyary of the Consultation booke twice a weeke from which the Second shall enter the same into the bookes of Accompts.

The Accompts Cash to be ballanced every month.

AND the Accompts of Cash to be ballanced in the Leidger every month as is used in the Surrat bookes.

The warehouse booke found in good method.

THE Warehouse bookes being found in good forme and Method agreeable to the Companyes rules it is recommended soe to continue them :

The Purser Generall of Hugly to take Accompt of all expences.

A booke for charges generall and Dyott.

THE Purser Generall or paymaster at Hugly (when there is one in that quallity setled there) to take charge of all expences in the Factory the concernes of the Deceased and of the Stores and all other things belonging to the Sloopes and vessells there and he is to keepe bookes and distinct Accompts of the same Vizt. One booke to Comprehend the Accompts of charges Generall and Dyett.

To keepe a booke for Sloopes stores.

THE Sloopes and vessells Accompts and the Accompts of the Stores provided for them and the mens wages belonging to said vessells which Accompts are to be monthly given into the Second to be entred in the Generall bookes and at the end of that booke to make a table of the whole yeares expence in distinct collumes under the heads and entred in the Generall bookes by which the same may be more readily compared:

A booke for registring of wills.

One other booke for registring of wills and testements and Inventoryes of the Deceased and that he doth gether in the monyes for all outcryes and pay it into Cash giveing Accompt of the same to the Second or booke keeper to enter into the Generall bookes:

A register to be kepp of marryages and burialls

AND in the same booke to keepe a register of births Christnings Marriages and burialls and the Cheife to appoint such assistance to the purser Generall as is convenient :

The 3d to take an Accompt of all expences in the Subordinate Factoryes.

IN the Subordinate Factoryes it was thought fitt that the third doe take charge of all expences in the same and to keepe the Accompts thereof as before prescribed and such assistance appointed him as shall be necessary:

Bookes to be ballanced by the last of Aprill.

THE bookes of Accompts of all the respective Factoryes in the Bay it is agreed to be most convenient to be ballanced the last of Aprill yearly and to be kept in the method now proposed the denomination of the mony to be in rupees annaes and pice of 12: to one anne valluing the rupee at 2s. 3d. according to the Honourable Companyes late order:

The Councell to meete twice a weeke.

WHEREAS the Honourable Company doe require that all transactions of buying and selling and all other affaires are to be resolved and concluded in Councell to which purpose dayly and frequent Consultations are to be kept it is directed for the future there be a meeting of the Councell to Consult of the Companyes affaires every Munday and Thursday or at least once a weeke and oftner as business shall require and if there be nothing materiall to be transacted at such meetings to make entry in the Consultation booke to that effect:

All transactions to be registred.

THE Consultation bookes in the said respective Factoryes to be kept in the nature of a Dyary wherein is to be entred the Dayly transactions of the Companyes business and the bills for Cash payd out as aforesaid and other materiall occurrences as the Arrivall and dispatch of the Shipps espetially what comes to knowledge of the business and proceedings of the Duch French Deans or other Europe Nations as what Shipps of theires comes and goe and as well theires as our transactions with the Government and great persons in these Countryes which passages being soe entred the advises to the Company may be abreviated by referring thereunto and the Diary and Consultation booke to be closed the last November yearly.

Letter bookes sent and received to be closed the last of November.

The Copy bookes of letters received and sent alsoe to be closed the last of November and by reason all letters are to be entred in the Register att Hugly the Subordinate Factoryes need only keepe Register thereof in the respective Factoryes and Hugly to send double Coppies yearly to the Fort whereof one to be writt upon for England the other for Fort St. George and to be signed by the transcribers that the Agent and Councell and the Honourable Company may see how the writers improve.

Subordinate Factoryes to send theire bookes of Accompts &ca. in treble Coppyes.

The bookes of accompts and the Consultation bookes to be sent by the Subordinate Factoryes to Hugly in treble Coppyes all signed whereof one Coppy to remaine there wrot upon for Hugly the other two Coppyes to be wrott upon one for England and the other for Fort St. George and alsoe

2 Copyes of the said Hugly bookes of Accompts and Consultation booke all signed to be transmitted thence to Fort St. George another Coppy of each said bookes to remaine in every respective Factory and not to be carryed away upon the removall of the Cheife.

JOHN MARSHALL	STREYNSHAM MASTER.
EDWARD LITTLETON.	WALTER CLAVELL.
SAMLL. HERVY.	MATTHIAS VINCENT
	EDWARD READE.

Proposalls to alter the Accompts.

PROPOSALLS for some alterations in the Honourable Companyes Accompts the defects and inconveniences found in the present method Vizt.

ACCOMPT CURRANT in the manner it is now used and stated in the bookes is not soe plaine and satisfactory as may be contrived for that noe Accompt is to be given why the Stock that is the Credit or rest of Accompt Currant at the Ballance of one paire of bookes is not transferred to the next paire of bookes to begin an other it is left out and soe in the new paire you are left to seeke what Stock did rest on Ballance of the last bookes and must find it out by substracting one parcell of the Accompt Currant from the other the Debtor from the Creditor and some other inconveniences comeing from what is proposed for the regulateing thereof of which hereafter

The time now used for ball: the bookes not fitt.

The time now used for ballancing the bookes (Vizt.) the last of September October or November is very unfitt and unseasonable.

The first reason why the time now used is not fitt.

FIRST. FOR that it is almost in the middle of the Season for Europe Shipping and soe it divides one years business into 2 paire of bookes as for example the goods or stock received out of England arriveing by the shipps in July or August is entred in one paire of bookes and the goods returned home by the same shipps (after November) is entred in the next bookes and soe againe part of 2 yeares business comes into one paire of bookes and the goods returned for England after November and the Stock received from England the yeare following in July or August is entred in one paire of bookes.

Thus confusedly comes one yeares returnes to be opposed to the following yeares receits and neither the returnes nor the Accompts of one yeare entred in one paire of bookes.

The second reason.

2d. Its unfitt time in respect to the proportioning the charges on the goods which must make a misunderstanding and an ill representment of the business.

The 3d reason.

3dly. Its an unseasonable time in respect of the booke keeper who being upon other business cannott soe well as is fitt attend to examine whether all accompts or goods doe accord with the Ballance which he drawes.

The first direction to rectify mistakes in Accompts.

For Regulateing these inconveniences it is requisite that the Accompt Currant be otherwise altered and stated (Vizt.).

First: That under the titles of Accompt Currant in last bookes the Ballance of one paire of bookes be began in the new paire for those words are thus understood that such Accompts were currant or goeing on in last bookes and were brought to a rest to ballance the said bookes and thence to be carryed or transferred and gon on with in a new paire and the Stock Credit on rest of Accompt Currant in these last bookes to be entred to Accompt Stocks Credit and both sides of this Accompt entituled Accompt Currant shall ballance as that Accompt ballance doth in said last bookes and noe further Accompt to be entred to it for it serves only to begin the new paire of bookes from Ballance of the old:

The second direction.

Secondly: That the Accompt Currant be kept under the title of Accompt Currant Fort St George to the Credit of which Accompt shall be entred all the Cargoes received from England or by Consignments thence and all Bills drawn on the Honourable Company and such other Accompts as by the coarse of business fall to that Accompts Credit being received thence payd or to be payd there and due here and to the Debt of said Accompt shall be charged all the cargoes returned to England and consignments thither or to other Factoryes by order thence not to be returned hither againe and such other sums as will fall to be soe charged the rest of which Accompt Currant Fort St. George is to be closed in every pair of bookes by Accompt Stock. The reason is because the Superiour is not Accomptable to the inferiour and if you return to the Accompt Currant more estate then you received you are not to demand the proceed thereof and if you return less the remainder lyes in stock for the disposall of all which you must follow your orders from your Accompt Currant.

The 3d direction.

THIRDLY: That to the title of Accompt Stock be entred as aforesaid the Stock of last bookes or the Credit or rest of Accompt Currant which will come under that title onely from the last bookes 1675 76 for hereafter it wlll come under his proper title of Accompt Stock its Credit and by this Accompt Stock should be clered Accompt Currant Fort St. George as aforesaid and the Accompt proffitt and loss and the rests of Accompts Stock carryed to Ballance:

Heads to be in the first folio of the leadger.

FIRST. These 3: Accompts to Stand in the first folio of the Leidger.

Accompt Currant in last bookes.
Accompt Currant Fort St. George.
Accompt Stock.

Agreed to ballance the bookes the 30 Aprill.

SECONDLY. That the bookes may be ballanced at such a seasonable time as may prevent all the forementioned inconveniences must be some time out of season for arrivall of the Shipping from England and soe neare as can conveniently be to the begining of that season is thought the best and therefore the 30: day of Aprill respecting the Ballancing the bookes in the Bay at Metchlepatam and at Fort St. George at the same time is at present thought most fitt for these reasons.

First reason.

FIRST. For that the bookes begin[ing] the first of May and ending the last day of Aprill will certainly comprehend all the business of one yeares shipping whereby will plainely appeare in the Accompt Currant Fort St. George what Stock was received and sent home by the same shipping and at ballance what goods are remaining ready proper for Europe aggainst the next shipps arrive and what Europe goods doe at that time lye unsold which things are of noe small satisfaction:

Second reason.

SECONDLY: Its a convenient time for proportioning the charges on all goods either bought sold or received and thus it may appeare what proportion there is between the Investments and the charges:

Third reason.

THIRDLY: Its such a time of vacancy that the booke keeper may have full time to examine perfect and compare all accompts and things and to have the bookes coppyed and finished as they ought to be in good time to send to the Fort and so home upon the first shipps and then alsoe may he enter upon a new paire of bookes before the press of business comes upon him by the Arrivall of the Shipps and being thus forward he will have convenient tyme to give attendance in the Councell and upon other business and yet proceed upon the bookes all the yeare in such sort that in case of his removall any other may enter upon the business and not to be to seeke for after reckonings :

Subdivision of the ballance to be under the severall heads underspecifyed.

Its alsoe necessary that a subdivision of the Ballance of the bookes be used in the manner following or into soe many of those divisions as the perticulars resting in Ballance doe consist of Vizt :

On the Dr. Side of Ballance.

First : Dead Stock.

The first head.

Under which enter all houses household Stuffe plate Cattle shipps boats gunns and what so ever things are not for saile putting the summes into the Inward Margent and drawing a line under carrying it out .. .. .. ———

Secondly : Desperate Debts.

The second head.

Under which comes all bad and desperate debts and Factoryes or voyages debts whereof there is small or noe hopes of haveing returnes .. .. .. ———

Thirdly : Monys and Good Debts.

The 3d : head.

Under this enter the Cash remaining and all such debts as are good whereof there is noe doubt. and all adventures and Factoryes debts abroad which are not to be Invested and returned in goods proper for Europe but in such goods as may turne to most profitt here in India .. .. ———

Fourthly : for Provision of Goods.

The 4th : head.

Under this comes all debts upon monyes impressed to buy goods and all such Factoryes debts where the Stock remaining is for the provision of goods———

Fifthly : Goods for Sale.

5th : head.

Under this is to be entred all goods which are for sale and doe yet remaine unsold .. .. ———

Sixthly : Goods for Europe &ca.

6th : head.

Under which enter all goods which are bought and provided for Europe or other places to be transported out of the Factory .. .. ————

TOTALL of Goods and Debts resting Amount to Rupees .. ....

ON THE CR. SIDE OF BALLANCE.

ACCOMPT STOCK for soe much ss that Accompt[s] Credit is .. ..

CREDIT upon Accompt.

Under which enter all the Credits that are resting upon Accompt to be adjusted in the bookes of this Factory ————

CREDITS upon Intrest.

Under which enter such Credits (if there be any of whom mony is taken up at Intrest or on Bills expressing the date of said bills .. .. .. ————

TOTALL of Stock and Credits resting Amount unto Rupees .. ....

The ballance being soe divided under severall heads will be of great satisfaction it being thereby evident what effects the Stock remaining is of and business directed and governed accordingly:

These rules are alsoe directed to be observed in all the Subordinate Factoryes in the Bay where [it] is to be noted that as Hugly Accompt Currant is [to] Fort St. George soe those Factoryes Accompt Currant is [to] Hugly and upon the Ballance of the Generall bookes of Hugly each Factory under it must remaine soe much a Debtor as Accompt Stock has Credit in the bookes of each Factory and care must be taken that all the Factoryes bookes be sent to Hugly in due time that they may be entred and made to Accord in the Generall bookes when they be closed:

Care to be taken that the bookes of the Subordinate Factoryes be sent to Hugly in due time ·

CASSAMBUZAR November 4: 1676:

At a Consultation

Present

STREYNSHAM MASTER ESQR.
MR. WALTER CLAVELL.
MR. MATTHIAS VINCENT.
MR. EDWARD READE.
MR. JOHN MARSHALL.
MR. EDWARD LITTLETON.
MR. SAMLL: HERVY.

Continued to regulate.

THE COUNCELL continued theire proceedings upon regulateing the Honourable Companyes affaires in the Bay according to theire commission and instructions to Mr Master.

All coppy bookes of Letters &ca. to be bound in leather.

It being observed that the bookes of Accompts and the coppy bookes of letters have noe covers to them it was therefore directed that all the Companyes bookes soe well those that are to remain in the severall Factoryes as those that shall be sent to the Fort to remaine there or to be sent to England be all bound up handsome and covered with leather and distinctly indorsed or wrott upon in full and plaine charrectars and Figures:

The title to the Honble. Company.

That the letters and advises to the Honourable Company may be addressed with a becomeing respect as becomes Servants to theire Masters they are alwaies to be wrott in a Submissive Stile and directed TO THE HONOURABLE THE GOVERNOR AND COMPANY OF MERCHANTS TRADEING INTO THE EAST INDIES.

Whereas there is many times mistakes in the proper names of goods the Company ordering some by a generall name which have severall distinctions in the Country.

Directions for expressing the names of goods in the Invoyces.

It is directed that in all such cases both the names of such goods be expressed in the Invoyces for England that is to say the name which the Company use and the distinct and proper name of such goods in the towne or Country where they are provided.

Mr. Vincents writeing as to the procureing goods approved off.

Mr. Vincent delivered in [an] Accompt in writeing of the manner of provideing of Taffaties and raw Silke in Cassambuzar which was read and agreed to by Mr. Marshall and Mr. Littleton experienced in the same to be the true state thereof:

Mr. Herveys writeing as to the procureing goods in Dacca approved off

MR. SAMUELL HERVY his Accompt in writeing of the manner provideing cloth at Dacca was alsoe read and approved to be the use and practice of those parts.

A list of the Honourable Companyes Servants taken.

A list of the Honourable Companyes Servants in the Bay of Bengall theire names employments places of residence Arrivall in India present degree and Sallary was taken alsoe a list of the deceased both which are ordered to be entred after this Consultation.

A list of the Honble. Companyes Servants to be sent home yearly.

And it is directed that lists of the like forme bee yearly sent home to the Honourable Company:

The Chests with locks and keys sent out by the Honourable Company this yeare to keepe theire

Kyes (*sic*) delivered Mr. Clavell.

seale in was delivered to Mr. Clavell but it appeares that the Honurable Company have noe seale with there Armes in the Bay and that one of the keys open two of the locks of the chest.

Mr. Vincent desired to translate the phirwan naos.

The Nishaun of Shasuja prince of Bengall and the Phirwannaes of the Severall Nabobs since him was delivered to Mr. Vincent and he desired to translate them :

The Desaeseds (*sic*) estate.

The estates of such as dye intestate in the Honourable Companyes service in the Bay are brought into the Companyes bookes and as usually five Per Cent hath been allowed for the care and paines of geathering in the Outcry mony :

Goods to be bought at Outcryes with ready mony.

And whereas it hath been usuall in some cases to charge some persons Accompts in the bookes with what they buy at Outcryes from hence forward it is to be declared at the Outcryes that all persons are to pay ready mony for what they buy and the mony to be geathered in and entred in the Companyes bookes accordingly.

All the Honourable Companyes Servants to reside in theire respective Factoryes.

The Honourable Company having ordered that all theire Merchants Factors Writers and Apprentices in the Severall Factoryes are to live in the Companyes House or Factory and to eate at a publick table for the more orderly Government of of the youths yet when occasion doe offer of treating the Duch or other Strangers it is thought fitt that the youths doe eat apart by themselves at such times and those only to come to the table whome the Cheife shall think fitt to call as is practised at Surratt :

The Honble. Companyes Indulgences delivered.

The Honourable Companyes printed Indulgences touching trade allowed to theire Servants of the 16 : November 1674 : alsoe the Indulgence granted to the owners Commanders and Seamen of theire Shipps dated the 2 : October 1675 : were now delivered by Mr. Masters and recommended to be duely observed :

Noe goods to be laded upon the Companyes Sloopes.

For the preventing of the lading of perticular mens goods upon the Companys Sloopes or vessels to the Honourable Companyes damage in the hindrance of theire business. It was directed that the Masters of the said Sloopes be ordered not to receive on board theire respective Sloopes or vessels any goods whatsoever without an order in writeing signed by the Cheife of Hugly or Ballasore or such as they shall appoint. And if any one of the said Masters shall be found to infringe this order the person soe offending shall be lyable to such

The Masters of the

Sloopes to be punished. punishment or penalty as the Cheife and Councell shall think fitt:

Orders concerning wareing [of] Flaggs. It being observed to be a Custome of the English in the Bay to were Flaggs in theire boats and when they travaile soe that the Cheife of a Factory cannot be knowne and distinguished from others[1] that are not Cheifes that they may be knowne to be English are to ware Ensignes or small square Jacks.

Orders to be entred. The Severall clauses in Mr. Masters Commission and Instructions relateing to the Honourable Companyes affaires or theire Servants in the Bay of Bengall are ordered in this Consultation booke:

And the rules made in Councell yesterday and this day are directed to be sent to each respective Factory in the Bay and soe many of the Clauses in Mr. Masters Commission and Instructions as the Cheife and Councell shall think convenient

STREYNSHAM MASTER.
WALTER CLAVELL
MATTHIAS VINCENT.
EDWARD READE.
JOHN MARSHALL.
EDWARD LITTLETON.
SAMUELL HERVY

HUGLY December 1680.[2]

At a Consultation

Present

STREYNSHAM MASTER ESQR AGENT

Fryday 12 MR. MATTHIAS VINCENT MR. R MOHUN

Regulations. For the better regulateing the affaires of the Honourable Company in the Bay of Bengall that the same may be mannaged in good order and method in the respective Factoryes it is resolved and ordered that the Cheife of respective

Receipt booke. Factory shall keepe a receipt booke wherein he shall take receipts for all monyes paid or Issued out and shall alsoe pass receipts for all mony received upon the Companyes Accompt:

---

[1] There is an omission here The instructions as originally given by S. Master run as follows: "It being observed..from others. It was therefore ordered that none but a Cheife of a Factory doe weare a Flagg with a Swallowes taile and all others that are not Cheifes..or small square Jacks."

[2] This is an error. The date of the year should be 1679.

Whereas it was ordered in the regulations made the 3d : of November 1676 : at Cassambuzar that the bills and attestations for mony paid out of cash should be read and passed in Councell every weeke and noted in the Consultation bookes in regard of Accompt Cash is since ordered to be entred at the end of every months Dyary it is thought best and ordered that the Accompt of Cash be read and passed in Councell the next Councell day that is upon the next munday or thursday after the last day of every month and the Summe of the Ballance or rest of Cash sett downe in every such Consultation :

Accompt Cash.

And whereas it was ordered in the aforesaid Regulations made in Cassambuzar that in the bookes of Accompts each Factory should be charged with what Imediately sent or received to or from thence it is now ordered that for monyes or goods sent unto or received from one Subordinate Factory to another the Subordinate Factory shall Credit Hugly Accompt Currant for the same in regard it is thought best and it is hereby ordered that every Subordinate Factory doe monthly at the end of theire Dyary and Accompt Cash enter the Accompt of what they have in that month received from or sent unto Hugly or any other Factory's in a leadger Accompt intituled Hugly Accompt Currant carrying the foot or rest of Said Accompt from one Accompt to the other monthly and if the Cheife and Councell at Hugly doe find the Accompt from the Factoryes doe not Agree with the Hugly bookes then they are to advise thereof and to send the Coppy of the said Factoryes Accompt as it stands in Hugly bookes and the Cheife &ca. at Hugly are to enter theire Accompt of Cash and the Accompt Currant Fort St. George at the end of theire Dyary which they are to send to the Agent and Councell twice in the yeare :

Hugly Accompt by the Subordinate Factoryes.

Collums ruled with red Ink for the quantities of all goods and treasure the number of the parcells and the weights shall be kept in the Leadger cast up and ballanced as exactly at the outward Collum for mony and in Hugly Leadger there shall be a Collum for Pagodas an[d] lb : S : d : in the Accompt Fort St. George :

Inward Collumes.

And whereas there is an order that the bookes of Accompts shall be read and passed in Councell monthly it is hereby ordered that if the bookes

Penalty for not passing the Accompts.

of Accompts the Warehouse Accompt and the charges generall for one month be not read and passed in Councell in the next month following the Cheife of each Factory shall note the reason thereof in the Dyary and the person who shall be defective herein shall for the first offence be admonished for the 2d: pay a quarters sallary and for the third be suspended the Service.

Penalty for not ballancing the Accompts.

And whereas there is an order that the bookes of Accompts shall be ballanced the 30 Aprill yearly if the [Second][1] of any Factory shall not have ballanced the bookes of Accompts of the Factory where he keeps the same and send the Ballance thereof to Hugly by the 31: May yearly he shall forfitt a quarter of a yeares Sallary for such his default and if the same be not done by the last day of June he shall forfitt ½ a yeares sallary and if not done by the 31: July he shall be suspended the Honourable Companyes Service and if the Second of Hugly shall not have ballanced the Generall bookes there within a month after all the ballances of the bookes of the Subordinate Factoryes are sent thither he shall forfeit a quarter of a yeares sallary for such his default and if they be not ballanced within two months he shall be suspended the Honourable Companyes Service:

The Cheife and Councell Impowred.

And the Cheife and Councell of the Bay are hereby required and impowered to put these orders in execution adviseing thereof to the Agent and Councell and following such other orders as they shall receive from them concerning the same.

Collum in charges generall bookes.

In Charges Generall bookes at the end of every month the heads and totalls of the severall charges are to be sett downe and summed up of the bookes to make tables with Collums for the severall heads or titles used in the Factory bookes summed up for the 12: months that the whole yeares expence may appeare togather and be more readily compared with the Factorye bookes:

Remaines to agree with the bookes.

At the ballancing the bookes of Accompts the Cheife of the respective Factoryes are to examine and see that the remaines in specie doe agree with the bookes of the Factory and with the Cash booke and warehouse booke and that the Debts and Credits be adjusted with the persons themselfes concerned therein:

---

[1] This word has been supplied from S. Master's "Memoriall" 1679–80

Whatsoever used of the Companyes goods by theire Servants to pay ready mony for.

If any person in the Companyes Service doe make use of any goods as broad Cloth Stuffs &ca. in the warehouse it shall not be charged to theire Accompts in the bookes but they shall pay for the same in ready monyes to the warehouse keeper who is to pay the said mony every month into Cash in the Cheifs Custody·

Accompt Sallary.

The Accompt Sallary is thus to be Stated every person in the Factory where he resides is to be Credited for his full Sallary by Sallary Generall and shall be paid twice in the yeare that is at lady day and Myhalmas (*sic*) day in equall halfes what is to be paid here by the Honourable Companyes orders then he shall be made Debtor to Sallary payable in England for what is short paid here to be paid there the Accompt of Sallary Generall is to be cleered by charges Generall and Sallary payable in England by Accompt Currant:

Durbar and port charges.

In the Hugly bookes an Accompt must be framed intituled Durbar and port charges to which Accompt shall be charged the Durbar charges of Dacca the charges of the Sloopes of Hugly in respect tis the head Factory for Governing the rest for which Durbar and port charges shall be made Debtor to charges Generall such a summe as charges of Hugly exceeds the charge of Cassambuzar or Ballasore Factory or thereabouts and this Durbar and port charges shall be put upon all goods provided in all the Factoryes at soe much Per Cent in the Invoyce (besides the Factory charges) for which Durbar and port charges shall be Credited in the bookes and the foote of the Accompt shall bee cleered by proffitt and loss as is the foote of charges Generall:

All Letters received from on[e] Sub: Factory to the other to be sent to Hugly.

The Coppy of all Generall Letters from one Subordinate Factory to another shall be sent to Hugly to be entred in the Coppy bookes to be kept there and sent for England and the Fort and in writeing of letters it is to be observed to mention the day upon which the letters were received:

The letters from the Company and the Fort to be sent to the Sub: Factoryes

The letters from the Honourable Company and alsoe the letters from the Agent and Councell shall (as soone as they can be Coppyed out) be sent to the Factoryes for theire perusall and better understanding of the Companyes business and the Said letters with all other letters or writeings received from and sent unto England and the Fort shall be coppyed into bookes and kept in the register at Hugly:

An office to be made in all the Sub: Factoryes.

In every of the Subordinate Factoryes there shall be a hansome conveinent roome large and well Situated neare the Cheifes and Seconds lodgings which shall be sett appart for the office and never diverted from that use in which roome shall be placed deskes or tables to write upon and presses with locks and keys wherein the Registers of the letters the Accompts and all other writeings of the Factory shall be locked up and kept which upon removes of the Cheifes are to be delivered over by Roll or list to the Succeeding Cheifes that none may be embazeled and at Hugly the said lists are to be kept by the Seccond in the Accoumptants office and by the Seccretary in the Seccretarys office:

A publicke table.

A publicke table shall be kept as the Company have appointed at which all single persons of the Factory are to dyet and noe dyet mony shall be allowed to single persons only to those that are marryed and doe desire to dyet appart dyet mony is to be paid as the Company have appointed and the Stuard for the charges of the table at Hugly and at Cassambuzar shall be the employment of one of the young men a writer or Factor by which they may gaine experience and the 3ds: in the other Factoryes is to take charge thereof as appointed at Cassambuzar in November 1676·

As to the expence of the table and all other charges the Cheifs of the Factoryes are to take care to order the same in the most frugall manner that can be that noe extravigance be practised and noe more peons and Servants kept then is necessary for the dispatch of the Companyes business and whereas the Honourable Company in theire 12: Section of theire letter of the 3d: January 1678/9: doe order an establishment of charges to be setled in every one of the Factoryes which though it cannot be perfectly done yet soe far as it can be done conveniently wee doe order and appoynt as followeth:—

AT HUGLY SERVANTS WAGES.

	Rs
Cheife	12
Second	8
Minister	6
3d: of Councell	5
4th: of Councell	5
Chyrurgion	4

	Rs.
Secretary	2
Steward	2

2 Pallankeens one for the Cheife the other for the Seccond 7 horses none of which are to be lent by any but the Cheife Gurriall Cookes Mussalls washing Dogkeeper Barber &ca. Servants as usuall :

AT THE SUBORDINATE FACTORYES.

Servants wages :
for the Cheife .. 6 Rupees Per mensem.
for the Second .. 4 Rupees.
for the Third .. 3 .
Charges Generall keeper 2 ,, at Cassambuzar only.
a Pallankeen for the Cheife.
3 horses not to be lent out but by the Cheife.
3 Gurrialls.
Cooke and mate.
2 Mussalchees.
for barber 2 Rupees Per mensem.
for washing what cost for all the factory.
noe dogkeeper nor dogs at the Companyes charge.
noe Candles[1] allowed but to the Cheifes and to those of the Councell in the respective Factoryes to the Chaplaine and to the Chyrurgion lamps are allowed to every chamber :

Cheifes removing.

Noe Cheife of a Subordinate Factory is to remove from thence to any other Factory without leave first had from the Cheife and Councell of the Bay under the penalties the Honourable Company have appointed and when any Cheife does remove from the Factory he shall first see that the bookes of Accompts be brought up to that day and the remaines of the warehouse and other Accompts doe Agree with the bookes and the rest of the Cash he is to deliver up to the Second and third and if these things be not done he is not to remove neither the Cheife of Hugly nor of a Subordinate Factory notwithstanding the licence from the Cheife and Councell of the Bay upon paine of being suspended the Honourable Companyes Service and when upon removall of a Cheife to an other Factory there is occasion of leaveing orders in the business of the Factory the said orders and directions shall be made in Consultation and not the Cheifes single Authority:

---

[1] There is an omission here. In the 'Memoriall' of Streynsham Master the passage runs as follows: "Noe Candles nor Beette to be allowed, as hath been used under the denomination of settlement charges. Candles are allowed only to the Chiefs....every Chamber."

All Investments to be ordered by the Cheife &ca. at Hugly.

The Cheife and Councell at Hugly must appoint the Investment to each Factory and summe up the whole together in one Consultation every yeare that it may appeare how and where the Severall goods are to be provided which the Company order:

Goods to be Agreed upon by Muster.

The price of all goods provided for the Honourable Company shall be Agreed upon by Muster and goods sorted by those Musters and in such Factoryes where there is noe mony to give out upon Dadone or imprest upon goods there the Cheife and Councell shall take care to agree with the Merchants for such goods (or some part of them) as the Honourable Company require in the month of February March or Aprill and that the mony shall be paid upon the bring [ing] in the goods in September or October following:

The allowance to be given by the Merchants.

And in regard the Companyes treasure is a long time converting into Currant mony soe that they are at the charge of Intrest for mony taken up to carry on their Investment therefore tis thought fitt and ordered to be observed in all Factoryes that upon all the peet and Currant Rupees which shall be paid to the Merchants upon the Investment on Dadonee or afterwards they shall allow 1¼· Per Cent upon Sicca Rupees never less then 2: Per Cent and as much more as the Batta shall arrise hereafter above one Per Cent and upon Gold Mohurs 2· annes and a halfe a peece more then the Bazar weights·

Contract made with Chittermull Saw

Whereas there is a Contract made by the Agent and Councell with Chittermull Saw at Cassambuzar for all the Silver and Gold which shall be sent to be sold in that Factory and there is a Contract made with Chimcham Saw at Ballasore by the Agent and Councell that they shall be payd the full mony for that Investment in treasure one month after the Arrivall of the English shipps but at noe certaine rate for the treasure therefore it is to be observed that the Ryalls $\frac{8}{8}$ must be payd Chimcham Saw &ca. at Ballasore not under 212: Rupees Per Cent and the Gold pistolls not

Contract made with Chimcham &ca

under 2: annees Per Tola above the Bazar rate for Gold Mohurs and they allowing the 1¼: Per Cent upon mony paid on the Investment is not to be charged to them in respect it will require a months time or more to convert treasure into mony and notwithstanding the Agreement with Chittermull Saw it will be convenient to trye what more can be made of the treasure in other Factoryes as at Pattana and at Maulda when that Factory is setled being neare the Mint at Rajamaull:

Care to be taken in remitting of mony.

There being some times difference of one or 2: Per Cent between the mony of Cassambuzar Hugly and Ballasore care is to be taken in remitting mony by Exchange or in Specie and alsoe in payment in Specie to allow the Company the Batta that shall arrise thereby in every one of the Factoryes.

To keepe old Merchants employed.

And it is to be observed to keepe the Companyes old Merchants imployed in provideing of theire goods soe long as they doe well that the Honourable Company may upon enquiry be satisfyed in theire dealings therefore noe old Merchants shall be put out of employment nor any new man employed without order in Consultation and reasons exprest therein for soe doing but if any old Merchant faile of bringin in his goods in time or not according to Muster he ought to be discharged.

The Merchants Accompts to be adjusted yearly.

And the Merchants Accompts must be adjusted once a yeare without faile.

Not to turn away old Servants.

The like is to be observed in the house Servants espetially the Vaqueells, Banjans, and Writers, that none of yours be turned off or new ones taken in without order of Councell signifying the reason for the discharge it being observed to be of bad consequence to turn off old Servants.

The Vaqueells Podars &ca. to have their wages out of the Dustoore except at Dacca.

And the Vacqueells, Banjans, Mutsuddies, Tagadgeers, and Podars shall from this time forward be allowed noe monthly wages but they shall be content with the Dustore of a quarter of an anne upon a Rupee which the Merchants doe allow them and they are not to take nor the Merchants to allow anything more upon paine of being discharged the employment both the payer and receiver and the said Dustoore mony shall be devided by the Cheife and Councell of the respective Factoryes to the said house Banjans, Writers, Podars, Tagadgeers, and Vaqueells if they doe not agree it among themselves except at Dacca where there being great occasion of expence for a Vaqueell the Cheife Vaqueell there shall be allowed what the Cheife and Councell of the Bay shall Judge convenient in case the Dustoore mony on that Investment be not suffitient for his maintenance.

Goods to be sent downe to Hugly as they come in.

The Saltpetre provided at Pattana is to be dryed before weighed of from the Merchants and not taken moist with allowance for it and it is to be sent downe as it comes in by 3: or 4: boates laden at a time and not all kept to the last which hath proved very prejuditiall the like is to be observed in sending the goods from the other Factoryes that all be not kept to the last but sent away as soone as they are packed to prevent the ill consequences of a Stop or any loss of time upon the dispatch of the Shipps.

Packing stuff to be bought at the cheapest rate

The packing Stuff is in all Factoryes to be bought at the cheapest hand with the Companyes mony the Accompts thereof to be kept as appoynted in the orders the 3rd: November 1676· and neither the warehouskeeper nor any others is to have any advantage thereby.

Ticketts to be attested.

Ticketts put into the bales by the warehousekeeper are to be attested by such persons as are in the Factoryes that can be spared to see that the quantities therein packed be according to the Tickett

The Sloopes not to saile in the night.

The Sloopes and vessells which bring up the treasure from the Shipps are to be ordered not to saile in the River in the night time when there is treasure on board.

Orders for Civill Government.

It being necessary to settle and appoynt orders for the Civill Goverment of the Factoryes a paper of orders such as wee made at the Fort to be observed by all persons in Civill employments there is now with some alterations agreed upon as entred hereunder and ordered to be observed in all the Factoryes in the Bay under the paine and penalties therein exprest which orders signed by the Agent and Councell to be sent to the respective Factoryes entred in the Consultation bookes and Fixed up in the offices there and in the Chappell here.

The Stations of the Honble. Companyes Servants appoynted.

The places and Stations and employments of all the Honourable Companyes Servants in the severall Factoryes in the Bay being debated is agreed upon and ordered in the list to be entred here under and every person that is now in the employment as here in is appointed to be ordered to remove and take charge of the same immediately after the departure of the shipps and with in the month of Jannuary next.

Regulations and orders to be sent to the Subordinate Factoryes.

These regulations and orders are to be coppyed and sent to the respective Factoryes for theire punctuall observation and complyance therewith and it is to be observed that those are not intended to invalidate those Regulations made at Cassambuzar in November 1676: otherwise then is exprest herein and those orders (with those made at Cassambuzar 1676 if not already done) are to be entred in the Dyaryes of the respective Factoryes:

STREYNSHAM MASTER.
JOHN NICKS Secretary. MATTHIAS VINCENT.
RICHARD MOHUN.

The
Honble:
Compas:
Seale

ORDERS made by us the Agent and Councell for affaires of the Honourable English East India Company upon the Coast of Cormandell and in the Bay of Bengall (for advancing the Glory of GOD upholding the Honour of the English Nation and preventing of disorders) to be observed in the said Honourable Companyes service in the Factoryes in the Bay of Bengall.

Admonishment.

Forasmuch as by all persons of all profession the name of GOD ought to be hallowed his service attended upon and his blessing upon our endeavours sought by dayly prayers as the quallity therefore of our place and Imployments requires and in discharge of our duty both to GOD and man first wee doe Christianly admonish every one Imployed in the service of the Honourable East India Company to abondon lying. Swareing Cursing, Drunckness, uncleaness. profanation of the Lords day and all other sinfull practises, and not to be out of the house or from theire lodgings late at night, nor absent from or neglect morning or evening prayers or doe any thing to the dishonour of ALMIGHTY GOD the corruption of good manners, or against the peace of the Government but if any will not heare us admonishing them wee doe (by virtue of the powers derived to us from the Honourable the Governor and Company of Merchants of London tradeing into the East Indies and by Authority of the Kings Majesties Royall Charter to them granted) order and appoynt that whosoever shall be found guilty of the following offences shall undergoe the penalties here unto annexed.

1st: Penalties for lying out of the Factoryes.

Whosoever shall remaine out of the house all night (without licence from the Cheife) or be found absent at the time of shutting the gates after 9: at night (without a reasonable excuse) shall pay 10: rupees to the use of the poore or sett one whole day publickly in the Stocks.

2d: Penalties for swareing and Cursing

Whosoever shall profaine the name of God by swareing or Cursing he shall pay 12d. to the use of the poore for every oath or Curse and in case of nonpayment after demand the said summe shall be leavied by distress and in defect of such distress the offender shall sett in the Stocks 3· howers.

3d: Penalties for lying.

Whosoever shall be guilty of lying shall pay 12d. for the poore for every such offence.

4th: Penalties for drunkness.

Whosoever shall appeare to be Drunck shall pay 5s. for the use of the poore for every offence and in case of nonpayment after demand the said summe shall be levied by distress and in defect of such distress the offender shall sett in the Stocks 6: howers.

5th: Penalties for missing divine Service.

Whosoever (Protestant) that lodges within the house (whither actually in the Honourable Companyes service or not) that shall be absent from the publicke prayers morning and evening on the weeke days (with out a lawfull excuse) shall pay 12d. for the poore or be confined one whole weeke within the house for every such default. and whatsoever Christian in the Honourable Companyes service shall be absent from the publick prayers morning or evening on the Lords Day (with out a lawfull excuse) shall pay 12d. for the poore for every such default and in case of nonpayment after demand said summe shall be levied by distress and sale of the offenders goods and in default of such distress the offender shall suffer imprisonment until payment of said summe soe forfited by him.

6th: Persons to be sent to the Fort.

If any by these penalties will not be reclaimed from these vises, or if any shall be found guilty of adultry. Fornication, uncleaness or any such crime or shall disturb the peace of the Factory by quarrelling and will not be reclaimed he or they shall be sent to Fort St. George there to receive Condign punishment.

7th: Orders to be red twice a yeare.

These orders shall be read publickly to the Factory twice in the yeare, that is upon the Sunday next after Christmas day, and upon the Sunday next after Midsummer day in the forenoone after divine service, that none may pretend ignorance thereof and all persons concerned therein are hereby Strictly charged and commanded to give due observance and not to act contrary to the same upon paine of undergoeing the penalties apointed and suffering further displeasure, In conformation wee have hereunto set our hands and the Honourable Companyes seale the 12: day December Anno Domine 1679: and in the one and thirtieth yeare of the Raigne of our Soveraingne Lord Charles the Seccond by the grace of GOD KING OF ENGLAND Scotland France and Ireland defender of the faith &ca.

STREYNSHAM MASTER.
MATTHIAS VINCENT.
RICHARD MOHUN.

One of the Factors or writers shall be monthly appoynted by the respective Cheifes to note and Collect the forfitures and to pay the same to the Cheife who is every yeare to send it to the Cheife &ca at Hugly and they are to remitt the whole Collections every yeare to the Agent &ca. at the Fort there to be paid to the overseers of the poore

JOHN NICKS Secretary.

The Worshipfull Matthias Vincent &ca. went for Cassambuzar

3 About 3 in the afternoone the Worshipfull Matthias Vincent with the rest of his Company went hence for Cassambuzar being accompanied by the Duch and us some way out of towne.

11000: Rupees brought in.

6 Permanund Sookanund Saws Gomaustah brought in and purked (sic) this day 11000 Rupees in part of the 20000 enordered us by the Worshipfull Matthias Vincent &ca when here.

Maulda May 1680.

At a Consultation

Present

SATURDAY 7 Mr. Fytche Nedham Cheife
Mr. Jonathan Prickman

Agreed with weavers.

Weavers haveing been sundry times caled at length wee agreed and gave those brought by Crepoll Deloll Burgunny at the rates agreed on formerly in consultation 29: past month for Sundry sorts of goods Vizt:

		r.	a.
Chandenyes 30: co: lo: and 2: broad ..	.. 200: ps. at	6	0
Orungshyes or Soozies Do. length and bredth	.. 100: ps. at	4	12
Elatches 30: long and 2: broad ..	.. 200: ps. at	9	0
Charconnaes do: length and bredth ..	.. 400: ps. at	3	8
Seersuccers do: length and breth ..	.. 200: ps. at	8	0
Nehallewars 36: covets long and 2: broad	.. 250: ps. at	4	8
Mundeells ..	.. 5: ps. to be		2¼ covets.
	1355: ps.		

Goods to be brought in 3: months.

broad and upwards and 36: covets long on which is given Allollhesob 60: Rups: all which goods are to be brought in 3: months and prized within the 4th: month as they are better or worse then the muster. FYTCHE NEDHAM.

A letter sent to Cassambuzar.

8 A letter was prepared approved of and sent forward to Cassambuzar adviseing of a bill given on them for 11000 Rups: payable to Sookanund.

At a Consultation

Present

Thursday 10 Mr. Fytche Nedham Cheife

Mr. Jonathan Prickman

Agreed with the Dololl.

Came to an agreement with Moneram Deloll and the weavers brought by him for Sundry sorts of goods desired by our Honourable Masters at the rates as specifyed Vizt:

		r.	a.
Chandenyes 30: covets long and 2: broad	130: ps. at	6	0 pr. ps.
Orungshyes or Soozzies do. length and bredth	12: ps. at	4	12
Elatches Do. length and bredth ..	300: ps. at	9	0
Charconnaes Do. length and bredth ..	200: ps. at	3	8
Seersuckers Do. length and bredth ..	100: ps. at	8	0
Nehallewars 36: covets long and 2: broad..	100: ps. at	4	8
Mundeells	5: ps. to be		2¼
	847: ps.		

Goods to be brought in 3: months.

covets broad and upwards and 36: covets long on which is given Allolhesob 60: Rups: all which goods are to be brought in 3: months or thereabouts and prized with in the 4th: month and according as they shall be better or worse then the Muster.

The hired house to be repaired.

The hired house whereing wee now for the present live being of brick but very much out of repaire and the roomes being for blackness and darkness more like dungeons then dwelling houses as are most if not all the houses in towne and the time of the raines growing nye it is thought fitt and Agreed to repaire soe much of the said house as shall absolutely be necessary as well for dwelling appartments as for Security of the Honourable Companyes goods from the rains which will now dayly be comeing in and besides that to fitt up what Chuppers or thatched places are convenient as for Stables, Cook roome, pallankeen house, and for the peons at the dore, and the Mutsuddies to write in &ca which at our departure to our new Factory may be removed hence and be of some use to us otherwise:

FYTCHE NEDHAM
JONATHAN PRICKMAN

Sadutbund Cauns transactions.

10 Yesterday and to-day the town of Maulda was put to a great alarm both our Phowsdar and Crowry prepareing to fly for feare of one Sadutbund Caun (formerly a Hindoo of these parts) whoe is come from the King with a Company of 4: or 500; horse pretending to have a phirmaund for his haveing the place of Congoy and for breaking a Hindoo Pagoda by Binnood Rayes house in Sawajaan where he now is it is alsoe reported that by beating an old woman of Binnood Rayes house hould into Confession has found 2½ lack of Rupees which he takes as his owne and alsoe 25: Turky horses out of his Stable and since has killed the old woman that told him of the mony and 2: or 3 men at the dore of the house entring in and other of Hernaraines Servants he imprisons and has forced some to turn Musellmen.

At a Consultation

Present

Wetnesday 12 Mr. Fytche Nedham Cheife
Mr. Jonathan Prickman

Agreement made with Gunnisham.

Agreed with Gunnishamdas Merchant of this towne for fine Tangeebs and Mullmulls on puttun or Burgunny and accordingly delivered him 3000 Rupees thereon they are to be from 7: rs. to 14: rs. per ps. and when come in they are to be prized as wee doe other peoples goods of those sorts

Agreed with Creepoll.

Crepoll Deloll bringin more weavers was agreed with them for 50: ps. more of Elatches on puttun or Burgunny at 9: rs. per ps. as afore:

Fytche Nedham
JONATHAN PRICKMAN

9000: rs: brought in and a noate given for the same.

13 The Councell mett but nothing of moment offered except that Permanund Saw brought in 9000: rs: to compleate the 20000: rs: enordered us whereupon a noate or bill was given him on Cassambuzar Factory for the same and a letter of advice drawn up read aproved and sent forwards to Mr. Edward Littleton &ca.

At a Consultation

Present

Saturday 15 Mr. Fytche Nedham Cheife
Mr. Jonathan Prickman

Agreement made with Symboodas.

Agreed with Symboodas Bramin Merchant of this towne to deliver him 1000: rs: to provide Tanjeebs from 7: rs: to 14: rs: per ps. and halfe Mullmulls from 5: rs: to 12: rs: they are alsoe to be prized raw as other peoples

Fine Muster brought and bought.

Haveing desire to see some Musters here of fine raw linen cloth before wee proceeded to Shabazpore all Delolls and Merchants comeing to our house haveing been spoken to about them yet none of those sorts desired by our Masters was brought us till to day amongst which weer two very good peeces of Tanjeebs brought by a weavbr of a Neighboring towne which were bought who to encourage him was delivered 201: rs: Burgunny for fine Tanjeebs to be prized by us without a Deloll which he was not easily brought to but hope in time to bring

201 rs. delivered on Burgunny.

them all to it with whome wee shall have to doe when once wee know them:

FYTCHE NEDHAM
JONATHAN PRICKMAN

Rumours of Sadutbund Caun.

• Here is still howerly news that Sadutbund Caun intends to come hither which putts the whole towne in Continuall fright espetially both our Governours belongin to Hernarraine Rayes present Congoy:

Sadutbund Caun removed.

17 Yesterday came news that Sadutbund Caun was removed from Sawajaan and intended for Rajamaull which has not little lightned the hearts of the Inhabitants of this towne (who had he come) would not have been able to encounter him:

At a Consultation
Present

Monday.

17 Mr Fytche Nedham Cheife
Mr. Jonathan Prickman

Agreed to sett out this day to Shabazpore &ca.

Thought fitt to entertaine 10: peons.

Wee haveing formerly been ordered by the Worshipfull Matthias Vincent &ca. by a Consultation held the 29: past that when wee had finished our first Dadne here to proceed to Shabazpore and its adjacencyes to see what can be done there and to make some begining to fasten the weavers to us till wee shall be supplyed with Stock it is thought fitt that wee carry with us Rupees 2000: that they may see wee doe not come for nought. Wee shall defer writeing to Hugly till wee come there and see what summe wee shall want for this dadne in order thereto wee intend this day (God willing) to sett out hence in the eavening with 2 of our Mutsuddies and a Deloll of this place who is well acquainted in those townes and may be able to give us some light into the business there every towne haveing its different Custome from this place It is alsoe agreed by reason of the present disorder in the towne and that the way wee are to goe being all wooddy and full of Tigers beares and theeves that wee take 10: peons extraordinary for the time wee shall be absent from the Factory that it bee not left without suffitient watch in this troublesome time·

FYTCHE NEDHAM
JONATHAN PRICKMAN

Sett out for Shabazpore &ca.

This afternoone Mr. Fytche Nedham and Mr. Jonathan Prickman sett out of Maulda to goe to Shabazpore.

Lay at Sickarpore.

Arrived at Singavad.

18 Last night wee arrived and lay at Sickarpore about 6 : Coarse from Maulda where being noe weavers this morning early wee went thence about 3 : Coarse further to Singavad where wee found the Jymindar was absent (in whose house wee tooke up our quarters) for feare of Sadutbund Caun the weavers of this place being about 4 : or 5 : and twenty was called and Musters brought which was very coarse Mulmulls of the Duch sorts 40 : covets long and 2¼ : covets broad the said weavers being all ready to run away after theire Jymindar wherefore at present wee forbore to treat with them ·

Came to Daudpore.

19 In the morning wee went thence to Dawdpore about 3½ Coarse distant where the Delolls and weavers being called was bid to bring Musters of what cloth was made in theire towne and its adjacenties

Nothing offered.

20 The Councell mett and satt but nothing of moment offered.

Bought Musters.

21 Bought Severall Musters being 16 : ps. of fine Mulmulls.

At a Consultation

Present

Saturday 22

Mr. Fytche Nedham Cheife
Mr. Jonathan Prickman

The Seekdar brought the weavers and wee agreed with them.

The Delolls and weavers of this place haveing Severall times been caled yet could come to noe Agreement the Seekdar or Governour with the Delolls combining to put tricks upon us which wee presently found wherefore this morning wee gave out that wee would bee gone hence this afternoon and accordingly after dinner sent our carryage before to our next Station whereupon about 4 : a clock the Seekdar with severall weavers came to our house finding us ready to depart licenced the weavers to take our puttun on the Termes wee proposed wherefore those weavers being 17 : wee bound Joyntly in one note being one security for the other and delivered them Burgunny for 24 : fine tanjeebs to be prized by us with out any Delolls or prefixed Musters of the towne which is Judged the best way of agreeing where wee have Imediately to doe with the weavers and it will alsoe be a meanes to draw them to Maulda to us which now they will not heare of but all must be prized in the severall townes:

Agreed to deliver Simboonaut 3000: rs: on Burgunny.

Seeing this towne to be large and its neighbouring villages many where much good cloth is made and considering it is to little purpose to Stay longer here not seeing any likelyhood of doeing much at present with the weavers for the reasons aforesaid and for that there hands are full of the Duch Burgunny which will be ready in 20: dayes and finding Symboonaut here a Merchant well experienced in these townes wee have thought fitt and Agreed to deliver him 3000: rs: on Burgunny for fine Tanjeebs and 1000: Rupees more to buy for ready mony here being at times very good Mulmulls and Tanjeebs to be met with. And soe to depart hence this night being Saterday to Tittillia a towne about 2: Coarse distance hence:

FYTCHE NEDHAM
JONATHAN PRICKMAN

Came to noe Agreement with the weavers

24 This morning haveing called the weavers of this towne of Tittillia who bringin severall peeses of the Duch sorts coarse Mulmulls one ps. whereof wee bought for 7: rs: but came to noe agreement with the weavers being few at present and for that one of the Duch Mutsuddies Jeram has kept back the Delolls of the towne by perswadeing him to give a note which he has done that hee will not serve us any thing as wee now heare he did at Daudpore what hee could both with Delolls and weavers and now is gone to Shabazpore for the same purpose. The weavers promiseing all to follow us the next day to Shabazpore and there take our Burgunny soe wee departed hence this morning and came to Shabazpore about noone where the Delolls of the place comeing to us wee ordered them to gett ready what good weavers they knew and alsoe some very good Muster peeces and bring them tomorrow morning to us.

Arrived at Shabazpore

Recd. a genll from the Worshipfull Matthias Vincent.

Wee received a generall from the Worshipfull Matthias Vincent &ca. from Cassambuzar dated the 20th Curiant.

Agreed not with the weavers.

27 The Councell satt and the Delolls and weavers were caled but could come to noe agreement with them.

At a Consultation

Present

Saturday the 29

Mr. Fytche Nedham Cheife
Mr. Jonathan Prickman

Came to an Agreement with the Delolls and weavers for 156: ps. Tanjeebs.

The Delolls and weavers while wee have been here have dayly been caled but (by reason of Jerams howerly running up and downe like one resolved to doe us mischiefe perswadeing the Delolls &ca. against haveing to doe with us, and alsoe the news of our first comeing noe doubt did not a little heighten the expectations of the weavers) wee could not come to any setled agreement till now which was with Muctaram and Droga Delolls and 103: weavers in one note together bound one for the other and the Delolls for them all to bring in 156: peeses fine Tanjeebs of severall prizes as specified in theire note and the time sett is 4. months within which all to be prized and what remaines to be paid in whereon it is agreed to pay them 1710: Rups: wee did not think convenient to agree upon a Muster for divers reasons. First wee had none fitt by us nor can wee at present buy any cheape and for that it is the Custome of Merchants here to agree with them soe besides it being to be prized in the towne theire Remaines tricks and troubles of running to Durbars &ca. as they have often served the Duch which is different from prizeing it at home where wee shall be much better able to deale with them which hope to bring them all to in time.

Thought convenient to take the enordered imposts at the prizeing the goods.

Wee proposed to them alsoe to pay out of theire Burgunny the impost layd thereon but by noe meanes they would consent to it being out of theire road yett they yeilding it is a Custome in theire towne to alow something of Dustore &ca. but not till theire goods are prized therefore tis thought fitt not to disturbe theire obstanacy farther but for this time to Comply with the Customes of the severall places for our better understanding of theire divers ways for dealing and at prizeing the goods to take or Cut of what is customary and what it falls short of the late enordered imposts to put the same on the goods and the next time of giveing them Burgunny wee shall have more leasure to deale with them when wee doe not much doubt but to bring them to it ·

FYTCHE NEDHAM
JONATHAN PRICKMAN

ACCOUNT CURRANT HUGLY. *Dr.* PER CONTRA. *Cr.*

May—		Rs.	As.	P.	May—		Rs.	As	P.
31	To Ballance	20926	0	3	1	By broad cloth fine 32½: yds.	370	0	0
						By broad cloch ordinary 43:	129	0	0
						By Rarities 40: ps.	35	11	6
						By Factors provisions	50	12	0
						By Severall Musters	83	0	0
						By Do. from Cassambuzar	257	8	9
					6	By Cash from Cassambuzar	11000	0	0
					13	By Do	9000	0	0
						Rups:	20926	0	3

31 The Councell mett but nothing of moment offered:

Accompt of presents given away to this day Vizt.

To the Jimindar of guas by the Worshipfull Matthias Vincent &ca. as followeth:

3 yards broad cloth ordinary green 3 do. red 2 knifes reathed and tipt with silver 1: Silver frame looking glass 1: Ivery framed green paire of spectacles 1 · do. white.

To our phowsdar Ramabeage as followeth:

3 yards Scarlett 2: yards fine green 1: yard ordinary red 1: yard ordinary green 3: paire of spectacles 2: white and 1. green 2 reathed knifes and 1 · plaine 20: bottles rose water.

To his Pisdust as followeth ·

1: yard fine green 1: yard ordinary Red cloth 1: paire of Spectacles 1: wreathed knife 5: bottles rose water.

To the Catwall ·

1: yard ordinary red cloth 1: do. green 5: bottles of rose water.

To the Catwalls Musshriffe.

2: yards ordinary green 3: bottles of Rose water.

To Jemshirebeage Crowry:

3: yards Scarlett 2: yards ordinary green 2 knifes tipt with Silver 15: bottles Rose water.

To his Mussheriefe:

1: yard fine green 1: yard ordinary Red 1: yard do. green 1: knife reathed with Silver 5: bottles rose water:

To his Mutsuddy Chaund Ray:

1: yard fine green 1: do. red ordinary 1: knife tipt with Silver 5: bottles Rose water.

To the Cozzee:

1: yard fine green 1: yard ordinary red cloth 1: knife reathed with Silver 1: paire of spectacles white 7: bottles Rose water.

To Do. Pesdust:

1: yard ordinary red cloth 3: bottles Rose water:

FYTCHE NEDHAM
JONATHAN PRICKMAN

CASH.	*Dr.*			PER CONTRA.	*Cr.*		
May—	Rs.	As.	P.	May—	Rs.	As.	P.
6 To Acct. Curt. Hugly. for what recd. here of Permanund to be repaid at Cassambuzar	11000	0	0	7 By Crepoll Deloll..	7660	0	0
13 To Acct. Batta on 1600 rs. Sickaes at 6: a: P. Ct. ..	6	0	0	11 By Moneram Deloll	5547	0	0
To Acct. Curt. Hugly for what recd. of Permanund to be repaid at Cassambuzar ..	9000	0	0	11 By Jonathan Prickman ..	300	0	0
30 To Permanund Sawat Intrest ..	5000	0	0	12 By Crepoll Deloll..	450	0	0
				13 By Gunnishamdas	3000	0	0
				15 By Simboodas Bramin	500	0	0
				,, By Trepodar ..	201	0	0
				By Acct. Batta on 1600 rs. Sickaes at 6: as: P. Ct.	6	0	0
				17 By Jonathan Prickman ..	300	0	0
				21 By Mulmulls 16: ps.	120	0	0
				22 By Simboodas Bramin ..	500	0	0
				By Monoro &ca. ..	222	0	0
				By Mulmulls 1: ps.	7	0	0
					18813	0	0
				Remaines ..	6193	0	0
	25006	0	0		25006	0	0

ERRORS EXCEPTED
Per FYTCHE NEDHAM

Maulda June 1680.

An earthquake.

1 Last night about sunn sett as wee sat discoursing with weavers came an Earth quake which lasted 7: or 8: minutes put an end to our business at that time.

Agreed to depart to Maypore.

Haveing done what wee could here wee resolved to goe hence this day to Maypore about 2: Coarse off and alsoe for that the waters are soe desperately bad makeing us with our Servants all sick working diversly on us giveing some Fluxes others feavers and Agues and some breaking out in large boyles and festring sores &ca. In our way to Maypore wee saw severall new foottings of Tigers as wee did divers times before in our way to other townes the natives every where telling us sad storyes of men and beast being carryed away by Tygers and beares the Country is very wooddy and watery uneeven land not much inhabited goeing hence this afternoone wee came to Maypore about 5: a clock where calling the Delolls and some weavers of the place ordered them to come in the morning and bring with them some cloth of theire towne that wee might make some Agreement with them.

Arrived at Maypore.

At a Consultation

Present

Wednesday 2

Mr. Fytche Nedham Cheife
Mr Jonathan Prickman

Agreed with the Delolls and weavers.

In the morning Porsotum and Rajeebs Delolls with severall weavers being come shewed us 3: or 4: ps. thin Tanjeebs of the Duch sorts not very good which wee could not Agree for, for reasons formerly given yet wee gave them Burgunny on the same termes wee did to those of Shabazpore and accordingly delivered them 414: rs. on fine Tanjeebs and agreed in the afternoone to depart hence to Kybert Gaum and Gualla Gaum about 1½ Coarse hence being somewhat on our way home. FYTCHE NEDHAM

At a Consultation

Present

Thursday 3d

Mr. Fytche Nedham Cheife
Mr. Jonathan Prickman

Last night and this morning the weavers of both the aforesaid Townes Kybert and Gualla

Agreed to deale with the weavers from Maulda.

with the Deloll which belongs to both townes was caled and discoursed but by noe meanes could come to noe agreement with them therefore it was thought best to let them alone at present and to deale with them from Maulda by meanes of a picar or Merchant which way they are acquainted with wee hope hereafter to have them all come to our Factory to receive our Burgunny when once the Ring leader comes noe doubt the others will follow between this and Maulda in our way home nor of neither side neare is any townes for cloth nor indeed hardly any houses it being very wooddy and full of wild beasts, wherefore it was agreed not to Stay longer in these parts to lose time among a few Stubborn people that are soe strangly wedded to theire owne silly wayes and Customes but this day forthwith to sett out hence for Maulda from whence by picars &ca wee shall deale better with them then at present wee can doe here and besides the waters rise soe fast that shall not get home by land if stay any longer.

The Accompt Cash passed.

The Accompt Cash for last month being examined was found to remaine Rups: 6193 in cash the 31: of May past:

FYTCHE NEDHAM
JONATHAN PRICKMAN

Arrived at Maulda.

4 Last night about 7: a clock wee arrived in Maulda from Gualla Gaum but never came such way in our lives for wooddiness comeing among bushes and Shrubs and shades over head by high trees for above 8: miles together continually expecting incounters with wild beasts but suppose the great noise of our Company kept them at distance·

Our Governors defeated by Sadutbund Cauns people.

Our Fousdar and Crowry some dayes since goeing with about 300: men to fight with Sadutbund Caun news was brought us of theire sad and shamefull defeate by not above 20: of Sadutbund Cauns crew 3: or 4: of them looseing theire lives and severall wounded our Governors narrowly escapeing with theire lives haveing lost all theire Armes and clothes and forsaken of theire Company was forced naked into the woods:

A letter sent to the Cheife &ca. in Hugly.

A letter was drawn up aproved and sent to the Worshipfull Matthias Vincent &ca. in Hugly:

Nothing of moment offered.

7 The Councell satt but nothing of moment offered soe departed each to his Employment:

At a Consultation

Present

Thursday the 10th

Mr. Fytche Nedham Cheife

Mr. Jonathan Prickman

Agreed to provide the mentioned goods at Seerpore

Considering the shortness of the time between this and the comeing of our Europe shipps and the great quantities of goods should be provided in the Factory and the weavers hands at present being full here and some sorts of the enordered goods being made very well in Seerpore and thereabouts therefore wee think fitt to have some provided there by which means alsoe wee shall see the difference of the goods of that and this place whereupon Ramkisson Coppore and Pertemull Nagiee Banjan was called being experienced men in these parts with whom wee Agree to allow them 2 Per Cent orrat and all other petty charges the Risgoe to be ours and they are to give us a true Accompt of all theire proceedings there in buying &ca and to pay us all remaines within 3 months from the time they receive our mony which wee agreed to deliver them which was 4000 Rups on the following goods Vizt

	Ps		Rs	As
Seersuckers 30 covets long and 2 broad ..	250	at	8	0
Charconnaes thred and silke 30 covets long and 2 broad ..	500	at	2	8
Tanjeebs 40 covets long and 2 broad .	10	at	10	0
Mulmulls Do . ..	10	at	10	0
			Rs	Rs
Seerbunds 1 covet broad and 40 long . ..	100	at	2	to 3½
Reyngs 40 covets long and 2 broad . .	10	at	4	to 7
			Rs.	As
Addatyes 22 covets long and 2¼ broad ..	10	at	6	0
Chowtors 30 covets long and 2 broad.. . ..	10	at	7	0
Hummums 24 covets long and 3 broad.. ..	10	at	12	0
Ambers 20 covets long and 2 broad	10	at	1	8
Amber Charconnaes white 30 covets long and 2 broad ..	10	at	2	0
in all ps. .	930			

Nott haveing Cash enough to carry on our Investment and Permenund not being able or willing to furnish us with more at present whereas wee thought he had had suffitient about it therefore wee Agreed to take up at Intrest else where for our present occasions till farther order can be had that our business be not hindred the time being far spent already:

Agreed to take up mony.

Fytche Nedham
Jonathan Prickman

A generall sent to Cassambuzar.

12 A Generall was drawn up agreed on and sent to Cassambuzar:

2000 Rups: brought in.

Cunjemun Saw brought in 2000 Rupees for which wee gave our note to pay him intrest 1: Per Cent Per mensem till repaid:

The Dutch visited us.

The Duch this day visited us whome wee treated with what sivility the time and season afforded:

Nothing offered.

14 The Councell met and Merchants were called but came to noe Agreement :

Our Governors returned.

Our Fowsdar and Crowry came home from the warrs with Sadutbund Caun haveing taken Muxadavad in theire way and Sadutbund Caun is gone to Ducca to answer his crimes there before our Governors entred the towne they sent home for clothes for themselfes and Flaggs for theire Dingees which was the best pleasure boates or rather Flight boates they could gett and alsoe borrowed 2: horses of the Duch to goe in state from the water side to theire houses where being arrived caused gunns to fire and Drums to beate all the afternoone throught out the whole towne.

Our Vaqueell complemented the Governours.

15 Sent our Vaquell to welcome our Governours home who sivily received our complement and bid our vaquell to desire us to send them a quart of Europe Vinager for medicine which was sent, we suppose it was for their wounded men:

At a Consultation

Present

Thirsday 15 Mr. Fytche Nedham Cheife
Mr. Jonathan Prickman

The Warehouse Accompts passed.

The Warehouse Accompts for last month being brought was red and passed.

The Accompts Charges Generall for ditto was

Accompts of Charges Generall passed.

also brought by Mr. Jonathan Prickman which was read and passed as followeth:

JONATHAN PRICKMAN. *Dr.*	Rs.	As.	G.	PER CONTRA. *Cr.*	Rs.	As.	G.
May—				May—			
11 To Cash	300	0	0	31 By Charges Generall from the 22d Aprill ..	289	14	3
17 To Cash .. .	300	0	0	By Reparations do. tyme ..	55	10	8
				By Charges Dyett	39	6	5
				By Servants Wages	141	12	5
				By Charges Cattell	3	2	0
					529	13	1
				By Ballance ..	70	2	19
	600	0	0		600	0	0

Agreed to send to Shabazpore to buy fine cloth

15 When we were at Shabazpore we remember we saw divers very good and fine peeces of white cloth of our sorts which then we could by no means buy unless at dear rates which we was resolved not to doe: by which means we suppose they may now be had rather cheaper then before our going thither wherefore it is thought necessary to send and buy some of them by another hand privatly which may afterward if Cheape be some help to us in prizing the Burgunny given them and others whereupon 200 rups: was dellivered Hurry saw picar to goe and buy as aforesaid but as if they were for his owne Accompt and not to use our names in the least.

Agreed with Crepoll and Moneram Delolls.

An agreement was also made with Crepoll Deloll and Moneram Deloll to deliver them Burgunny 8. or 9000: Rups: on divers sorts of White goods desired by our Masters made near this place to be brought in and prized and all remaines paid within 3 months from the time they shall receive our Mony and give their notes which at present for want of Stock we could not compleat and quantities of mony are not to be had often in this towne the sorts and quantities agreed for are as followeth:

		Rs.	
Tangeebs	aboute 127:	ps. from 7:	to 14 per ps.
Mulmuls	.. 809:	ps. from 5:	to 12
Reyngs	.. 119:	ps. from 3:	to 7
Seerbunds	.. 174:	ps. from 2½:	to 3½

FYTCHE NEDHAM
JONATHAN PRICKMAN

Mr. Trenchfeild Arrived.

16 Mr. R. Trenchfeild 2d: of this Factory Madam Nedham and Mrs. Mary Cole arrived with letters about 10: a Clock from Cassambuzar

1100: Rups: brought in at intrest.

17 Cunjemun Saw brought in 1100 rups: more at Intrest at the former rates which was also received of him and a note given for the same.

A letter sent to Hugly.

18 A Letter being perused and approved was sent to his Worship &ca. in Hugly.

Permanund saw dellivered a bill for 4000: Rups.

Permanundsaw delivered us a bill exchange for 4000: rups: to allow 12 a: per cent per exchange payable to Ramkisson and Pertemull at Gera Gaut which was taken of him for the forwarding our busines designed thereabouts and for that the wayes being somewhat dangerous to carry money.

A letter sent to Cassambuzar.

19 Wrote to Cassambuzar in answer to theirs of the 11 Currt. advising also of the 4000: Rups. taken up of Permanundsaw.

The Dutch came to our house.

21 The Dutch visited us this afternoone whome we treated as usuall.

At a Consultation

Present

MUNDAY 21

Mr. Fytche Nedham Cheife
Mr. Richard Trenchteild
Mr. Jonathan Prickman

The Generall books passed.

Our Generall books of Accompts kept by Mr. Ri. Trenchfeild for last month was perused and passed which was what at present offered:

FYTCHE NEDHAM
RI. TRENCHFEILD
JONATHAN PRICKMAN

Ramkisson &ca. dispeeded.

22 Dispeeded Ramkisson and Pertemull to Seerpore according to our former agreement.

Jno. Griffith arrived.

Aboute 7 a'clock at night John Griffith with 2: pions arrived here bringing letters with 15000: rups. by boate from Cassambuzar which was very welcome to us coming very seasonably our busines haveing required the same severall daies.

Mr. Sowdon arrived.

23 Mr. Sowdon and a Vaquell from pattana for Hugly arrived here bringing us the sad news of the Englishes greevous disgraces there by Syfe Caun at his leaving his Imployment.

Nothing of busines offered.

24 The Councell met but nothing of busines offered.

At a Consultation

Present

Friday 25

Mr. Fytche Nedham Cheife
Mr. Richard Trenchfeild
Mr. Jonathan Prickman

Presenting the Officers at Rajamaul deferred.

Sukedevee our Rajamaull Vaquell haveing been sent for came about 3: daies since with whome we consulted about given the presents there which was sent to us from Cassambuzar being nearer and agreed not to give yet but rather to stay till Hoge Zuffe Caun be passed by (whome we intend to meet) that soe possibly may see if any of those officers now in place may be turned out or noe and also in hopes of the coming of our new Generall Phirwanna or elce one perticular for that place (if it be to be had) and soe give the present at the same time the phirwanna is shewed which will make the present better esteamed, therefore the said Vaqueell was this day dispeeded to his residence and ordered to give the Officers smooth words and fair promises that our busines be not stopt in the intrim

Agreed with Persaud Moode

Persaud Moode a Deloll of Orrua having severall times been called came to an agreement with him for Cassas of those parts from 7: to 14rs. per ps. 40: co. lomg and 2: co. broad of the ground of a ps. of those parts shown us on which is ordered to be delivered him 500: rups. they are to be brought within 3 months from this tyme and prized according to their worth and all remaines paid within the sade time:

FY. NEDHAME

Mr. Sowdon went hence.

This morning Mr. Sowdon with our new Hugly Vaqueell went hence for Cassambuzar.

Letters recd from Hugly.

28 The Councell mett but nothing of moment offered.

Came letters from the Worshipfull Matthias Vincent &ca. Councell dated the 11th.

Forts Generalls Arrived. 29 Coppies of 2 Generalls from the Fort to the Worshipfull Matthias Vincent &ca. Councell one dated the 18th: March the other the 8th: Aprill arrived here being sent for our perusuall.

Letters sent to Cassambuzar. Sent letters to Cassambuzar advising of the receipt of 15000: Rups. sent us by boate from thence &ca. Agreed with Gunishamdas to provide Orrua Cassaes on the same termes as before with Pursaud Moode on which is delivered him 2500: Rups.

ACCOOMPT CURRANT HUGLY. *Dr.* PER CONTRA *Cr.*

June—		Rs.	As.	P.	June—		Rs.	As.	P.
30	To Ballance ..	36146	14	6	1	By Ballance last month ..	20926	0	3
					16	By Musters from Cassambuzar	17	14	3
						By Chandnies 2 : ps : from Do.	13	0	0
						By a Pallankee from Do. ..	190	0	0
					22	By Cash from Do.	15000	0	0
							36146	14	6

FYTCHE NEDHAM
RI. TRENCHFEILD
JONATHAN PRICKMAN

CASH. *Dr.*

June—		Rs.	As.	P.
1	To remaines last mo.	6193	0	0
12	To Permanundsaw at Int. ..	4000	0	0
	To Cunjemun at do. 1 r: per Cent ..	2000	0	0
17	To do. at Intrest at do. ..	1100	0	0
19	To Permanundsaw at Int. ..	4000	0	0
24	To Accompt Currant Hugly received from Cassambuzar	15000	0	0
30	To Accompt Intrest recd. of Merchants &ca. on 15805: ru: pd. them at 1 r: 4 a; per cent this mo: from the 16 day	197	9	3
		32490	9	3

PER CONTRA. *Cr.*

June—		Rs.	As.	P.
1	By Mucteram and Droga on Tangeebs ..	1710	0	0
	By Simbodas on Bur.. ..	3000	0	0
	By do. to buy for ready mony ..	1000	0	0
2	By Pursotum and Rajeb ..	414	0	0
15	By Hurrysaw for Musts ..	200	0	0
16	By Moneram deloll	2500	0	0
	By Crepoll deloll ..	3200	0	0
19	By Gunishamdas..	500	0	0
	By Ramkissno and Pertemull ..	4000	0	0
24	By Pursand Moode	500	0	0
	By Moneram deloll	1805	0	0
	By Jonathan Prickman ..	300	0	0
	By Crepoll deloll..	800	0	0
25	By Cunjemunsaw prin. ..	3100	0	0
	By Accompt Intrest on do ..	11	8	0
	By Gunishamdas on Cassaes ..	2500	0	0
	By Household Necessaries for 50 ps. China ware as per pert ..	68	0	0
		25608	8	0
30	By Ballance ..	6882	1	3
		32490	9	3

Errors Excepted
Per Fytche Nedham.

Maulda July 1680:

Nothing offered.

1 The Councell met but nothing offered, in the evening paid the dutch a visit.

The Jydgea taken at Rajamaul.

2 Came news that the Jydgea begins to be taken very strictly at Rajamaull.

At a Consultation

Present

Fryday 2

Mr. Fytche Nedham Cheife
Mr. Ri. Trenchfeild
Mr. Jonathan Prickman

Agreed with puttunemull for Cassaes.

Puttune Mull picar of this towne being called we came to an agreement with him as with persaud Moodee to provide Ourrua Cassaes a very good sort of Cloth and accordinly delivered him Rups. 2000: burgunny on the aforesaid sorts of goods which are to be brought in and prized and all remaines paid within 3 Months and 10: daies from this time.

Cash Accompt past.

The Accompt of Cash for last month was read and passed and the remaines at the end of the month was found to be 6882: rs. 1¼: as.

Fytche Nedham
Ri. Trenchfeild
Jonathan Prickman

800: ru. delivered the warehouse keeper.

3 Delivered Jonathan Prickman warehouse keeper 800: Rups. to provide packing stuff for our investment.

Nothing presented.

5 The Councell met but nothing of moment offered.

100: r. sent to provide dooriaes for Musters.

7 Sent to Simbodas at daudpore Rups. 100. to buy 10: or 12: ps: fine Dooreas to send home for Musters quantityes being made a little beyond that place.

No busines offered.

8 The Councell met the result of which was every one to repaire againe to his imployment nothing of greater moment offering.

Letter received from Hugly and Cassumbuzar.

10 Came letters from his Worship in Hugly and also from Cassambuzar.

At a Consultation

Present

13

Mr. Fytche Nedham Cheife
Mr. Richard Trenchfeild
Mr. Jonathan Prickman

Agreed with Gunnishamdas for 600 ps. Erendy

Gunnishamdas being called and discoursed we came to an agreement with him to provide 600: double ps. Erindie Cloth and 4 bales

Cloth and 4· bales Do yarne.

Erindy Yarne or thread the great weight at Hurrypore he is to have 2: per cent Orrut for his paines and all other petty charges allowed him and a true Accompt of said goods is to be given us and all delivered in here within 3 Months from this day on which is delivered him Rups. 500: Came to an agreement with Crepoll Deloll for the following sorts of goods on Burgunny Vizt:

Agreed with Crepoll for Elatches and Nehallewars.

Elatches	250:	ps. at 9: rs. per ps: 30: co. long and 2: co. broad
Nehallewars	50:	ps. at 4: 8: as. per ps. 36: co. long and 2: co. broad
	300	ps. which are to be brought in within 3 months from this time and all remaines paid in.

Agreed with Gunnishamdas for 35: ps Elatches

Agreed with Gunnishamdas for 35: ps. Elatches on Burgunny of 9: r. per ps. on same termes with Crepoll:

FYTCHE NEDHAM •
RI: TRENCHFEILD
JONATHAN PRICKMAN

At a Consultation

Present

Wenesday. 14 Mr. Fytche Nedham Cheife
Mr. Richard Trenchfeild
Jonathan Prickman

Agreed to take up mony at in trest.

Considering the great quantity of goods we still want for our investment enordered and our present want of mony to goe forward with our busines it was thought fitt and agreed to take up at Intrest what could gett till should be supplied from Cassambuzar or other wise and accordingly Perranaut brought in 1500: rs. peet to lye in our hands at the Intrest of 1: ru. Per cent Per mo. to be allowed him till repaid:

1500· Rups. brought in at Intrest

FYTCHE NEDHAM
RI: TRENCHFEILD

1500: ru. taken up at Intrest.

15 Heirderam Tewarre delivered to us 1050: Rups. to lye at Intrest in our hands at the former rates.

At a Consultation

Present

Thursday. 15

Mr. Fytche Nedham
Mr. Richard Trenchfeild
Mr. Jonathan Prickman

Banissurdas ordered to goe to Rajamaull.

Banissurdas for denying the Companyes busines is dismist their Service.

Banissurdas a man being entertained here some months since in the Imployment of a Mutsuddy at present having litle for him to doe at home was pitched on to be sent to Rajamaull with presents to severall people there. they being sent from Cassumbuzar hither being nearer and also to procure and bring with him rafters and planckees bespoke here formerly by his Worship which we understand they mightily want in Hugly that their new building may be covered before the Raines are much sett in and likewise to get boards to make Chests for packing our goods it being time wee had them but he stifly denying to obey our Orders herein. saying twas a busines below him and many such like excuses that becomes not servants wherefore and for many like tricks plaid with our Weavers picars &ca. it is thought fitt to dismis him his imployment this day in Order theirto have now ordered another to take an Accompt of all papers and Accompts belonging to that Imploy which being done shall give him leave to find a better service if he can.

A Generall sent to Cassambuzar.

A Generall was wrote read approved and sent forward to Cassumbuzar:

FYTCHE NEDHAM
RI: TRENCHFEILD
JONATHAN PRICKMAN

At a Consultation

Present

Saturday. 17

Mr. Fytche Nedham Cheife
Mr. Richard Trenchfeild
Mr. Jonathan Prickman

Agreed with Moneram and Crepoll Delolls.

Agreed with Crepoll Deloll and Moneram Deloll for sundry sorts goods such as the Honorable Company desire on the same termes as before the time lemeted for their bringing them in and prizing them is 3: months the sorts are as followeth:

17 Crepolls part is Nehallewars 100: ps. at 4: r. 8: a. Per Burgunny.

Monerams part is Vizt:

Chandenyes	170:	ps. at 6r. Per ps.	on Burgunny
Nehallewars	100:	ps. at 4r. 8a. Per ps.	
Charconnaes	50:	ps. at 3r. 8a. Per ps.	
Orungshies	20:	ps. at 4r. 12a. Per ps.	

A generall sent to Hugly.

A Generall drawn up approved and sent forward to the Worshipfull Matthias Vincent &ca· Councell in Hugly:

FYTCHE NEDHAM
RI: TRENCHFEILD
JONATHAN PRICKMAN

1000: rs. brought in at Intrest.

21 Cunjemunsaw brought in 1000: Rups. to lye in our hands alowing him Intrest for the same at 1 Per Cent Per mo. till paid.

At a Consultation

Present

Thusday.

22 Mr. Fytche Nedham Cheife
Mr. Richard Trenchfeild
Mr. Jonathan Prickman

Agreed with Crepoll and Moneram Delolls for Nehallewars and Mulmuls.

Crepoll Deloll and Moneram Deloll was called and agreed with for divers sorts goods apart on same termes as on the 17th: past on Burgunny the quantities and sorts each man is to provide are as followeth:

Moneram Nehallewars 100: ps. at 4r. 8a. Burgunny.

Crepoll Vizt:

Nehallewars	100·	ps at 4r. 8a. Per ps. Burgunny.
Mulmuls	10:	ps. at 10r. Per ps. Do.
	110. ps.	

Bobboray ordered to goe to pro-

It being now the season to send to buy wood for building our new Factory and 20: md. petre to goe home this yeare for a Muster wee could thinke of noe fitter person to Imploy in that concerne then Bobboray our Vaqueell who now doeth litle here he haveing formerly been a

vide wood for our Factory.

Jemidar in these parts and knowes the Country and the roguery very well (as we have found by his practising some of them here of late) and besides Nabob Spindar Chaan has the Azzarre of wood with whome he will possibly have to doe with in procuring it wherein he may do our Honorable Masters more service then by continuing here Idle (as he hitherto has been tho not for want of work) all his life time but he absolutely refused to goe thither and indeed any where out of towne unless we goe with him and many such peremtory excuses wherefor not thinking it meet that such a fellow should be upheld in his sawsines on his Imediate request we dismissed him his Imployment having now got another who wee doubt not will doe the busines of a Vaquell as well and more faithfull then hitherto we finde the other has done.

Bobboray dismist the Companyes service.

Books of Accompts passed.

Our Generall books of Accompts for last month was read and passed. The Warehouse Accompt for ditto month passed the Accompts of Charges Generall for ditto month was perused and passed as followeth:

JONATHAN PRICKMAN.	Dr			PER CONTRA.	Cr.		
	Rs.	As	G.		Rs	As.	G.
July—				July—			
1 To Remaines last month ..	70	2	9	31 By Charges Genll.	41	13	03
24 To Cash ..	300	0	0	By Reparations ..	45	15	17
				By Servants Wages	113	5	5
					201	2	5
				By Charges Dyett	64	4	15
				By Remaines ..	104	11	09
	370	2	9		370	2	9

FYTCHE NEDHAM
RI: TRENCHFEILD
JONATHAN PRICKMAN

Received letters from Rajamaull.

23 Came letters from Rajamaull Vaqueell advizing us of the stop of severall of our boates there and that they would not take the present sent them the phousdar demanding Rups. 1000 and such like but we hope those troubles will blow over of them selves.

Agreed with Moneram for 5: ps. Mulmuls.

Delivered Moneram on Burgunny for 5 ps. Mulmuls 50: Rups. to be brought in and prized within 3 months from this time.

Received Lead and Quicksilver with a Generall from Hugly.

Came letters from his Worship &ca. in Hugly by boate with 100: piggs Lead and 3: Cases of quicksilver.

At a Consultation

Present

Munday. 31

Mr. Fytche Nedham Cheife
Mr. Richard Trenchfeild
Mr. Jonathan Prickman

Agreed with Moneram Deloll for Nehallewars

Agreed with Moneram Deloll for 100 ps. Nehallewars on Burgunny on the same termes as the 17th Currant on which paid him Rups. 450

Accompt Currant Hugly. *Dr.*				Per Contra.			*Cr.*
July—	Rs	As.	P.	July—	Rs.	As.	P.
31 To Ballance ..	54220	7	3	1 Ballance last month	36146	14	6
				mds. sr. By Lead 435: 21..	3484	3	3
				By Quicksilver md. s 10: 30: ..	1505	0	0
				By Charges Merchandise on ditto hither ..	46	13	6
				10 By Permanundsaw pd. Suckanundsaw in Cassa: ..	13000	0	0
				10 By Accott. Intrest on 9000: Rups. to do there ..	37	8	0
					54220	7	3

Fytche Nedham
Ri: Trenchfeild
Jonathan Prickman

Cash.		Dr.
July—		Rs. As.
1	To Ballance last mo.	6882 1¼
2	To Accott. Intrest recd. on 2000: ru. burgunny given out at 1¼r. Per cent	25 0
14	To Perranaut at Intrest at 1¼r. Per Ct.	1500 0
15	To Herderam Tewarre at Intrest at 1r. Per Cent ..	1050 0
21	To Cunjemun saw at Do. intrest ..	1000 0
	To Herderam Towarre on Do.	1000 0
	To Accott. Intrest recd. of Merchants &ca. on Rups. 7080: at 1¼r. Per Cent	88 8
		11545 9¼

Per Contra.		Cr.
July—		Rs. As.
2	By Puttnemull on Cossaes	2000 0
3	By Jonathan Prickman for Packing	800 0
6	By Household Necessaries for one very small Tent & 2 purdaes ..	45 0
7	By Simbodas on Dooriaes	100 0
12	By Gunishamdas ..	500 0
	By Crepoll Deloll ..	2475 0
15	By Gunishamdas ..	315 0
17	By Moneram Deloll ..	1740 0
	By Crepoll Deloll ..	450 0
22	By Jona. Prickman ..	300 0
	By Moneram Deloll ..	450 0
	By Crepoll	550 0
27	By Perranaut part of principall ..	500 0
	By Moneram Deloll ..	50 0
31	By ditto	450 0
		10725 0
	By Ballance ..	820 9¼
		11545 9¼

FYTCHE NEDHAM

Mauldo Augt. 1680:

1 Came letters from Cassumbazar:

At a Consultation

Present

Munday. 2d

Mr. Fytche Nedham Cheife
Mr. Richard Trenchfeild
Mr. Jonathan Prickman

Visited the Crowry.

The time now drawing on for the coming in of the goods of our Burgunny it is thought convenient that Mr. Nedham and Mr. Trenchfeild with our Vaqueell goe this afternoone to Jemsheirbeages the Crowryes durbar to feell how he stands effected to us and if possible to gett his Order for our Burgunny goods coming into our Factory without being Chopt by him (as the dutches are) but ours no where elce in Bengall yet tis feared twill not be granted us he haveing rented the Azzarre of that and all things elce in this towne:

Accompt of Cash past.

The Accompt of Cash for last month was examined and past the remaines in Cash at the end of the month being found to be Rups. 820: 9¼.

FYTCHE NEDHAM
RI: TRENCHFEILD
JONATHAN PRICKMAN

Hoge Zoffe Caun departed from Pattana.

2 Merchants letters from Pattana tell us that Hoge Zoffe Caun is departed thence on his way to Dacca to recover his former Imployment of Kings Duan their againe:

Hoge Zoffe Caun past Rajamaull.

3 Hoge Zoffe Caun passed by Rajamaull in great hast not Staying at all their nor suffered he any one to see him:

Letters recd. from Hugly and Cassumbazar.

4 Came letters from Hugly and Cassumbazar:

Quicksilver sold.

Sold 2 Mds. Quicksilver to Tockoredas at 3r. 13a. Per seer:

Letters sent to Cassumbazar.

5 The Councell meeting a generall was drawn up read approved and sent forward to Cassumbazar which was at this time what offered to us:

At a Consultation

Present

Saturday. 7

Mr. Fytche Nedham Cheife
Mr. Richard Trenchfeild
Mr. Jonathan Prickman

Sent to poronia to buy wood and musters of Petre.

Bebboray denying to goe to Poronia about procuring wood for building our new Factory and patterns of Petre to send home this yeare it being a Busines Judged proper for such a man as a Vaqueell because tis thought we must have to doe there with Nabob Spindar Caun in buying those things he haveing the Azzarre of them wherefore after some trouble wee have found 2: Men called Pahlaud and Ramhudder whome wee Suppose able to performe that busines whose Securityes being taken we thinke and agree to send them this day with a letter and a Small present to Spindar Caun to be presented or not as they see occasion Vizt:

3 yards Scarlett	1: knife Silver twisted and tipt
2. yards Ordinary	1: Do. plaine
1. Sword Blade	1: box with Shapes

which we doubt the wood being all in his hands will fasillitate the procuring what sorts we shall have occasion for which otherwise might be difficult if at all to be had in order thereto we have now delivered to the Above said Phalaud and Ramhudder Rups: 300: which tho litle may serve to secure the wood till they shall informe us what they shall want more and till we are more in Cash when shall supply them with the rest. Wee also ordered them to gett forthwith and send the wood his Worship &ca. desires att Hugly which cannot be got at Rajamaull till the waters are downe for wild beasts being upon the hills where it is also now we thought fitt to take into our consideration the great necessity all [*sic*] almost continuall want of a Budgera here (the Country round about us being our flowed great part of the yeare) for visiting and gigeing out Burgunny in the severall townes about us where most of our busines lies litle of our goods being made in this towne &ca. reasons wee question not but twill be well approved of wherefore we now have ordered them to provide and bring with the rest wood convenient and fitt to make a Budgera Comodious for travelling as aforesaid:

FYTCHE NEDHAM
RI: TRENCHFEILD
JONATHAN PRICKMAN

Mony received from Cassumbazar.

8 John Ellis arrived from Cassumbazar by boate bringing us Rups: 12000: with Generall advices thereof Accompt the Honourable Company.

Delolls &ca. called but could not agree

9 The Councell mett and Delolls and weavers was called to take our Burgunny of us for part of what coloured goods is yet wanting but could come to no Agreement with them.

A stir raised by Mendy beage.

A Great Stir was raised in the towne this day by Mendy beage and his roguish assosiates about wild Goggs [*sic*] flesh thrown into the River by our Harry tho not near his house the sole cause of his enmity to us wee conjecture must be that we would not trust him with any of our Burgunny this year nor buy his house both which he had hopes off which made him make such hast from Dacca he is very poore and dispised by almost all people of note here.

At a Consultation

Present

Thusday. 10

Mr. Fytche Nedham Cheife
Mr. Richard Trenchfeild
Mr. Jonathan Prickman

Agreed with the Delolls for Severall Sorts of goods.

Crepoll Deloll and Moneram Deloll being called an agreement was severly made with them on termes as formerly for the following goods which are to be brought in and prized within the month of October next the different quantityes they are to provide are as followeth :

Crepolls part is

100 :	Ps. Nehallewars	at 4r.	8a.	P. Ps.
100 :	Ps. Charconnaes	at 4 :	8 :	P. Ps.
200 :	Ps. Do.	at 3 :	8 :	P. Ps.
50 :	Ps. Orungshies	at 4 :	12 :	P. Ps.

Monerams part is

100 :	Ps. Charconnaes	at 4 :	8 :	P. Ps.
100 :	Ps. Do.	at 3 :	8 :	P. Ps.
100	Ps. Orungshies	at 4 :	12 :	P. Ps.

FYTCHE NEDHAM
RI : TRENCHFEILD
JONATHAN PRICKMAN

Letters sent to Cassumbazar. 11 A generall letter was drawn up read approved and sent forward to Cassumbazar by Madam Nedham and John Elliot.

At a Consultation

Present

Saturday. 14

Mr. Fytche Nedham Cheife
Mr Richard Trenchfeild
Mr. Jonathan Prickman

Presented the Dutch Doctor.

The Dutch Doctor having very often been with us and administred phisick divers times to us all this Sickly time it was thought fitt and convenient to consider and encourage him for the future to be assisting to Us on all occasions it is agreed to present him with 5 : gould Mohurs.

Agreed with Crepoll for Charconnaes

Came to an agreement with Crepoll Deloll to take our Burgunny of 235 : peices Charconnaes at Rups. 4 : 8a : Per Ps. on former termes to be brought in and prized in the month of October next on which is delivered him Rups. 1057 : ½.

Letters sent to Hugly.

14 A Generall letter was drawn up read approved and sent forward to his Worship &ca. in Hugly:

FYTCHE NEDHAM
RI: TRENCHFEILD
JONATHAN PRICKMAN

At a Consultation

Present

MUNDAY. 16

Mr. Fytche Nedham Cheife
Mr. Richard Trenchfeild
Mr. Jonathan Prickman

Agreed with Gunisham for Tangeebs and Mulmuls.

Understanding that at Shabazpore very good Tangeebs and Mulmuls are yet to be had such as our Honourable Masters wants and cheap and Gunisham being called we agreed with him and dellivered him Rups. 1000: on Orrutt 2: Per Cent to be allowed him for his paines and he to give us a true Accompt of all his proceedings they are to be brought in within 1½ months from this tyme this way of dealing amongst the Rest for the yeare is not thought amiss that by finding out the severall Customes of these parts we may for the future know the better how to deale with and hold these Cursed people to hardest termes.

Charges Generall past.

Jonathan Prickman brought in his Accompt of Charges Generall which was read and past as followeth:

JONATHAN PRICKMAN. *Dr.*				PER CONTRA. *Cr.*			
Augt.—	Rs.	As.	G.	Augt.—	Rs.	As.	G.
1 To Remaines Last month ..	104	11	9	31 By Charges Generall	62	14	10
22 To Cash	300	0	0	By Reparations ..	55	2	18
				By Servants wages	120	1	2
					238	2	10
				By charges Diett..	62	2	0
				By Ballance ..	104	6	19
	404	11	9		404	11	9

The Charges Reparations has many things put to its Accompt which should have been in charges Generall occasioned by Jonathan Prickman sickness and the Writers not being yet well versed in his Imployment to distinguish those heads exactly which is hoped for this time will be excused.

The warehouse and generall books past.

The Warehouse Accompt was delivered in read and passed.

The Generall books of Accompts was read and passed:

FYTCHE NEDHAM
RI: TRENCHFEILD
JONATHAN PRICKMAN

At a Consultation

Present

Thusday. 19

Mr. Fytche Nedham Cheife
Mr. Richard Trenchfeild
Mr. Jonathan Prickman

Agreed with the Delolls for severall goods.

Crepoll Deloll and Moneram Deloll and the weavers brought by them both being discoursed with we came to an agreement with them for divers sorts of goods on former termes except that the time limited for their bringing in is somewhat less they being to be brought in and prized within the month of October the Delolls parts and sorts of goods are as followeth:

		Ps.	Rs.	As.	
Crepolls part	is				
Charconnaes	..	100:	at 4	8	P. Ps.
Monerams part	is				
Seerbunds ..	..	150:	at 3	0	P. Ps.
Orungshies ..	..	68:	at 4	12	P. Ps.
Charconnaes	..	100:	at 4	8	P. Ps.

418: in all These goods at first we thought could not easily be got ready in soe litle time but the Delolls and also many weavers assuring us it was feasable and giving us incouragement thereto their Loomes being now fitted to our breadths we agreed forthwith so delivered them money on Burgunny for all the aforesaid goods that noe time be lost our Monsoone being very neare:

FYTCHE NEDHAM
RI: TRENCHFEILD
JONATHAN PRICKMAN

3 Wild goggs killed.

Here was lately killed by the Mogulls 3 wild Goggs in one day within the Towne of Maulda one was killed close under Mendy Beages walls (of which he dares not say any thing) and one in a Mussellmans house the other ran into their Muzzett and stayed their ½ an hower till twas forct out and at last killed in the river the coming of soe many wild beasts in to this and other towns about us is occasioned by the exceeding hights of the waters which drives them from their dens in the woods which are generally lower ground then the towns:

Hired a house for a Godowne.

20 Hyred Delaur Cauns house for a godowne Roome (it being of Brick and lies conveniently Just over against our other Godowne) for the Companyes use at 2r. 8a. Per month for which a note was given him this day:

Sent letters &ca. to Hugly.

23 The Councell mett and drew up a Generall letter to accompany our Diary for last month and Coppies of our letters to other Factories which being approved of was sent forward to Hugly which was what offered:

The Fousdar and Crowry visitted us.

This evening both our Fousdar and Crowry came to visit us hoping to get something of us by faire meanes which they saw could not obtaine by foule when after some complements to each other we seemed to make a lasting friendship promising often to visit each other &ca:

Received a simple Mahazur by the Cozze against us.

25 Our Fowsdar got from the Cozze and sent us the Mohozzer drawne up against us (by Mondy Beages instigation) for eating Pork and throwing some in the river which conteyned most lyes but not against us soe as to doe us any hurt tho it had been sent to Rajamaull but on the contrary might have turned the Cozze out as tis thought by all:

Received letters from Poronia.

27 Came letters from poronia from those men we sent thither for wood &ca. which informe us that not any wood or Petre is to be had there but by meanes of Nabob Spindar Caun who has the Azzarre of all there wherefore they have thought fitt to give the letter and small present sent with them for that purpose on which the Nabob promised them what they desired and ordered them a place to reside in whilest they stay:

Received letters from Hugly.

28 Came letters from his Worship &ca. in Hugly.

Sent letters to Hugly and Cassumbazar.

30 The Councell mett and drew up Generall letters one for Hugly and one for Cassumbazar which being approved was this day sent forward:

ACCOMPT CURRANT HUGLY. *Dr.*

Augt.—		Rs.	As.	P.
31	To Ballance ..	66245	7	3

PER CONTRA. *Cr.*

Augt.—		Rs.	As.	P.
1	By Ballance last month ..	54220	7	3
	By 1 Chest Rose water ..	25	0	0
8	By Cash from Cassumbazar ..	12000	0	0
		66245	7	3

The presents given out this month was only those things mentioned in Consultation of the 7th Currant to Spyndar Caun;

FYTCHE NEDHAM
RI: TRENCHFEILD
JONATHAN PRICKMAN

CASH. *Dr*

Augt.—		Rs.	As.
1	To Ballance mo.	820	9¼
6	To Quicksilver 2 md. at 3r. 13a. P. sr.	305	0
8	To Accompt Currant Hugly received from Cassumbazar . .	12000	0
26	To Accompt Intrest received on Merchants &ca. on Rups 6843: Burgunny given out at 1¼r. P. Cent ..	85	8½
	Rups.	13211	1¾

PER CONTRA. *Cr*

Augt.—		Rs.	As.
7	By Accompt present bought Vizt: 1 Sword Blade 3r. 1 box shapes 2r.	5	0
9	By Perranaut principall	1000	0
	By pahlaud and Ramhudder ..	300	0
	By Accompt Intrest to perranaut ..	10	13
10	By Herderam Tewarre Principall	2050	0
	By Accompt Intrest to Do ..	13	5½
	By Moneram Deloll	1275	0
	By Crepoll Deloll ..	1837	8
14	By Charges Generall presented the Dutch Doctor for his care of us all haveing all been sick &ca. ..	62	13
	By Crepoll Deloll ..	1057	8
16	By Gunishamdas ..	1000	0
19	By Accompt Plate Vizt: 1: Beatle box fine weight sicca Rups. 59 11 makeing do. at 2½a. p ru 9 4 1: plate to do. fine wt. sicca ..58 0 making do. at 2½a. p. ru. wt. .. 9 1	136	0
	By Jonathan Prickman for Expences ..	300	0
20	By Moneram Deloll	1223	0
	By Crepoll Deloll ..	450	0
		10720	15½
31	By Ballance ..	2490	2¼
	Rups.	13211	1¾

FYTCHE NEDHAM

Factory Records, Maulda, vol. 1.

Maulda September 1680.

At a Consultation

Present

Mundy. 6

Mr. Fytche Nedham Cheife
Mr. Robert Trenchfeild
Mr. Jonathan Prickman

Acco. of Cash past.

The Accompt of Cash for last month after perusall was passed the remaines at the end of Ditto month was found to be Rupees 2490 : 2¼.

Agreed to present the Governours.

Being now upon prizing our goods which are come in and the Governours all being very hungry after gifts and endeavouring dayly to put tricks upon and to ensnare us that soe perhaps they might force somewhat from us and not to be beholding for it to us (as they now say they are not for what given them in May last when his Worship was here esteeming that as accidentall by his coming hither) therefore to satisfy them in some reasonable measure that they may befrind us on occasion if should have any quarrells with our weavers &ca. in prizing goods from them it is agreed to get ready the following presents viztt:

To the Cozze of Rajamaull 2 pairs of spectacles 1 green 1 white glasse.

To our Fousdar Ramabeage viztt. 1 : yard Scarlett 2½ yards ordinary Red Broadcloth 1 box with Shapes 1 knife twisted and tipt with silver 1 pair of Green spectacles 10: botles of Rosewater.

To his peesdust 1 pair Spectacles ½ yard Broadcloth ordinary.

To Jemsheirbeage our Crowry viztt: 1 yard Scarlett 2½ yards Ordinary broadcloth 1: Tryangular glasse 1 knife reathed and tipt with silver; 1 do. wrought 10: botles Rosewater.

To the Cozze viztt. ½ yard Scarlett 2½ yards Broadcloth ordinary red 1 knife wrought 5 botles Rosewater.

To his Peesdust 1 yard Broadcloth Ordinary: it is also concluded to visit our Fousdar and Crowry this Afternoone:

FYTCHE NEDHAM
RI: TRENCHFEILD
JONATHAN PRICKMAN

Visited the Governours.

Aboute 4 in the Afternoone we went all 3 of us to visit our Governours as above who in hopes that they now should at least [obtain ?] somewhat of their desires to draw some thing from us treated us very civilly.

Prized goods

6 Prized divers sorts of coloured goods.

Prized goods.
Sent the present to the Crowry.

7 This day was spent in prizing coloured goods divers sorts sent the present to Jemeshierbeage our Crowry which was agreed to be given him as above

Prized goods
An earth quake

8 Prized coloured goods as Elatches &ca.

About 9 at Night was an earthquake lasting 2 Minutes

Nothing offered
The Fousdars servants quarreled with the Dutch

9 The Councell mett but nothing extraordinary offered

A great Stir was this day raised by the Fousdars servants at the Dutch Factory fighting at their dore with there people where many of them went off with broken pates as not many daies before they did from our dore which was the best Justice could be had to right our selves.

An arrow shott into our house

12 About 1 a Clock at night a broad Iron pointed Arrow was shott into our house and almost hit a pion that slept at our dore whereupon a great complaint was made to the Fousdar withall threatning him to send the Arrow to Dacca &ca. if he would not give us satisfactory Justice whereupon he seemed very hott on our side but that was soone cooled after he had ransaked all the widoes moodyes and weavers houses about us and taken mony from them who possibly never had an arrow in their lives (and called many people to see his zeale for Justice) which was all he gott.

Sent 200: Rups. to Simbodas

13 On advice from Simbodas as our Gomastah at Daudpore that more fine Mulmulls and Tangeebs was to be had wherefore we sent him Rups 200 for do. Accompt this day which was not offered.

Received letters from Hugly.

15 In the evening came letters from Hugly.

Delivered out 500r. to buy Mulmuls and Tangeebs at Shabazpore.

16 Delivered Gunishamdas Rups. 500: more to buy Mulmuls and Tangeebs att Shabazpore having had advice from our Tagadgeers that good cloth was yet to be had for ready mony and cheape of the Companyes lengths and breadths which we every were from our first coming have alwaies encouraged the weavers to make which hereafter may be of no small advantage to us divers waies our remaines will be

less and not soe dangerous and the weavers will be more fixed to us haveing alwaies a certaine markett for their Cloth &ca.

The Dutch are giving out Burgunny.

THE DUTCH have lately begun their new burgunny and given out some thousands of Rupees and have Rupees 50000: more now on the way hither from Cassumbuzar.

A fire hapned in Towne.

18 About ¾ Night was a great fire in Maulda tho we thanke God it did not come near us for we have a good deale of thatch about our house

At a Consultation

Present

Munday.

20

Mr. Fytche Nedham Cheife
Mr. Richard Trenchfeild
Mr. Jonathan Prickman

The Generall Books of Accompts for last month was read and passed Mr. Prickman brought in his Accompt of the Warehouse which was passed and also his Accompt of Charges Generall as followeth:

JONATHAN PRICKMAN.				*Dr.*	PER CONTRA.				*Cr.*
Augt.—		Rs.	As.	G.	Augt. —		Rs.	As.	G.
1	To Remaines last month	104	6	19	31	By Charges Genll. ..	83	12	7
19	To Cash ..	300	0	0		By Reparations ..	3	7	3
						By Servants Wages..	119	15	13
						By Charges Dyett ..	64	15	0
							272	2	3
						By Ballance ..	132	4	16
		404	6	19			404	6	19

A Generall sent to Hugly.

This morning early a Generall was drawn up and now approved and sent forward to his Worship &ca. in Hugly:

FY: NEDHAM
RI: TRENCHFEILD
JONATHAN PRICKMAN

Letters received from hugly and Cassumbazar.

21 Came letters from the Worshipfull Matthias Vicent &ca. in hugly and also from Mr. Edward Littleton &ca. in Cassumbazar with Rups. 5000: Accompt the Honorable Company in Charge of Samuel Pine and one pion on their Factory Budgera.

A generall sent to Cassumbazar

25 Sent letters to Cassumbazar by Samuell Pine advising of the receipt of the mony sent by him.

29 A Generall was drawn up aproved and sent to the Worshipfull Matthias Vincent &ca. in hugly

ACCOMPT CURRANT HUGLY *Dr.*

Sepr.—		Rs	As	G.
31	To Musters Overcharged in our Diary last may	1	0	0
	To Ballance	71244	7	3
		71245	7	3

PER CONTRA. *Cr.*

Sepr.—		Rs	As.	G.
1	By Ballance last month ..	66245	7	3
21	By Cash from Cassumbazar ..	5000	0	0
		71245	7	3

29 Many Consultation daies this month has passed without notice herein nothing of moment offering in them

FY NEDHAM
RI TRENCHFEILD
JONATHAN PRICKMAN

CASH *Dr*

Sepr –		Rs.	As.
1	To Ballance last month ..	2490	2¼
21	To Acct Currt recd from Cassumbazar ..	5000	0
31	To Accot. Intrest recd of Merchants &ca on 1200 Rups ..	15	0
		7505	2¼

PER CONTRA. *Cr.*

Sepr —		Rs.	As
3	By Gunishamdas ..	500	0
6	By Accompt presents viztt : 1 Tryangle glasse. 2½ 1 box with Shapes: 2	4	8
13	By Symbonaut ..	200	0
	By Gunishamdas ..	500	0
23	By Jonathan Prickman	300	0
		1504	8
30	By Ballance ..	6000	10¼
		7505	2¼

FYTCHE NEDHAM

Maulda October 1680:

At a Consultation

Present

Munday. 4

Mr. Fytche Nedham Cheife
Mr. Richard Trenchfeild
Mr. Jonathan Prickman

Accompt Cash passed.

The Accompt of Cash being perused was passed the remaines being found to be Rups. 6000: 10: ¼: which was al the matter of Consultation that this day offered:

FYTCHE NEDHAM
RI: TRENCHFEILD
JONATHAN PRICKMAN

Received letters from Hugly.

5 Came letters from Hugly and an abstract of a Fort Generall dated August the 12: 1680.

At a Consultation

Present

Wednesday. 6

Mr. Fytche Nedham Cheife
Mr. Richard Trenchfeild
Mr. Jonathan Prickman

The Vaqueell ordered to goe to Poronia to procure the wood &ca. enordered.

1000: Rups. delivered to the Vaqueell.

Haveing lately had letters from our Gomaustas att Poronia advizeing that they had bought yett but 200: timbers (which alsoe wee beleeve to be very deare) and they haveing given us soe little and soe blind an Accompt of the Salt petre business in those parts about which wee had soe fully ordered them that now it is thought fitt and agreed to Employ our Vaqueell in that business for that wee understand there is little to be done but by the Nabob Spinyard Caun that wee have at present not much business for him here but what our other Servants will be able to doe all, our petty Governours being now at one with us therefore haveing first largely Instructed him about takeing an Accompt of the Salt petre made in those parts and to bring a patterne of it to send home this yeare and to buy what wood more wee shall want for building our Factory for Compleating of which wee have Delivered to him Rups. 1000: (for which he is to be accomptable) and 2: yards ordinary broadcloth to be given the Nabobs Duan to make his entrance into our busines when arives there ordring him alsoe that if hee found Phahlaud and Ramhudder any wayes to have abused our trust put in them then to seeze theire papers and send hither with Phalaud to be examined here but otherwise if he found they could be assisting to him to keep one or both of them with him till our busines be finished which hope will be in few dayes to our Content:

Lead Sould

Agreed with and sould to Permanund Saw Lead 40: mds. 20: Seers at 8: rs. 2: a. Per Md· Hugly weight·

FYTCHE NEDHAM
RI: TRENCHFEILD
JONATHAN PRICKMAN

6 Prized white cloth as Mulmulls and Seerbunds:

Wrote to Hugly.

7 A letter of large advice being drawn up read and approved was this day sent forward to Hugly·

8 Prized Mulmulls and Reyns from Monerams weavers.

9 Prized goods and in the evening vizited our Fousdar.

10 Prized Tangeebs and Mulmulls from Crepolls weavers and in the evening late wee sent the present to the Fousdar agreed to be given him last month

14th· 15th: and 16th: prized Tangeebs and Mulmulls from Gunneshamdas:

Received a Generall and a Invoyce of 8· Chests Silver.

17 At night came letters from his Worship &ca. in Hugly with Invoyce of 8: Chests Silver on the way hither amounting to with Charges Rups. 62906 14a: but wee doubt twill not at all suply our wants because here is noe Merchants to buy it or any part thereof, for which reason wee shall not be able to give out new Bergunny soe soone as wee desired and are now ordered which will hinder us much Causing the loss of many of our best weavers to the Duch &ca. they dayly endeavour to gett as wee have often advized, and besides the best and cheapest thred will be bought up the Duch haveing given out upwards 60000: Rups. already on white Cloth

Prized goods and wrote to Rajamaull.

18 Prized goods from Gunneshamdas alsoe wrote to our Rajamaull Vaqueell to try if Could find any Merchant that would buy any of our silver that is Comeing and send them to us.

19 Prized goods from Gunneshamdas and Crepolls weavers.

20 Prized goods from Crepoll in the morning and afterwards came foule weather which was to dark to prize fine goods in.

Received letters from Rajamaull.

Came news from our Rajamaull Vaqueell that noe Merchants would come hither to buy Silver without which att that distance they cannot well be dealt with.

21 Foule weather.

22 Prized goods from Monerams weavers.

Received a generall from Hugly.

23 Prized Dos. goods. By a Cassambuzar peon Came the Hugly generall sent by the treasure boates who informed us that the sayd boates were stoped in the way and that a peon was gone to Cassambuzar being near there to Complaine and Cleare them.

24 Prized fine white and Coloured goods from Crepolls weavers.

25 Prized Coloured goods from Ditto.

At a Consultation

Present

Mr. Fytche Nedham Cheife
Mr. Richard Trenchfeild
Mr. Jonathan Prickman

Bookes of Accompts passed.

The Generall bookes of Accompts being brought up to this time were Read and passed and alsoe the Accompt of the warehouse.

The accompt of Charges Generall was Read and passed as followeth:

JONATHAN PRICKMAN.			*Dr.*	PER CONTRA.			*Cr.*
Sepr.—	Rs.	As.	G.	Sepr.—	Rs.	As.	G.
1 To Remaines last month..	132	4	0	30 By Charges Genll. ..	48	12	0
26 To Cash ..	300	0	0	By Servants wages ..	128	0	0
				By Charges Dyett ..	69	0	8
					239	12	8
				By Romaines ..	192	7	12
	432	4	0		432	4	0

A generall sent to Hugly.

A Generall Letter being now drawn up was Read and aproved and ordered to be sent forward Imediately to Hugly advizeing his Worship &ca. the difficulty wee shall find to sell the silver that is comeing and the great inconveniency wee shall suffer thereby for want of ready mony to give our weavers on new Burgunny for next yeare most of theire hands being now empty and the Duch dayly practiseing and useing theire utmost Indeavours to gett them from us &ca. wherefore wee doe not yet take our remaines of any body nor shall not till have mony to give out again but order them to buy thred with it and what more can procure which may be a meanes to hinder them goeing to the Duch or Pitan Merchants for some time tho tis shure they cannot Subsist and lye Idle long. therefore tis hoped a speedy suply will be ordered us

FYTCHE NEDHAM
RI. TRENCHFEILD
JONATHAN PRICKMAN

Saltpetre boates passed Rajamaull.

26 Prized Coloured goods from Crepoll. Came letters from our Rajamaull Vaqueell advizeing that the Honorable Companys petre boates from Pattana passed that place the 22: Curt: in theire way to Hugly soe hope they may gett there in time.

Bullion arrived.

27 At night arrived the boat with 8: Chests Bullion qt 26 Ingotts in Charge of 4 peons which was housed the same hower.

Sould Quick silver.

Sould Goopeenaut 20 Seers Quicksilver at 3rs 13as Per Seer ready mony.

28 Prized Sundry goods from Monerams weavers.

At a Consultation

Present

Mr. Fytche Nedham Cheife
Mr. Richard Trenchfeild
Mr. Jonathan Prickman

Haveing news from our Taggadgeers at Shabazpore and those parts that those goods wee gave out for our selves to the weavers are ready to prize wee pitched on Richard Trenchfeild to goe thither who can now best be spared (tho none well for our assistance is but very small and Considering the indisposition of body wee have had in this place) but Gunneshamdas a Merchant of this place and others with whome

Sent Benarsedas to Shabazpore.

wee deale heareing wee intend to send an Englishman thither to prize goods desired us by noe means to doe it but next yeare when had more time to dally with them for by report of all (and our owne experience when there) they are mighty stiff rogues to deale with and they haveing great quantities of our cloth there to prize which the weavers refuse to doe till ours is done therefore to avoyd charge and exceeding trouble and the danger of not haveing ours nor the Merchants goods there prized this yeare to goe home being very late in the yeare it was thought fitt and agreed to deliver those concerns of ours in those parts to Benarsedas to prize which may make the goods be Cheaper and come in better time wherefore wee have now delivered to him all the weavers and Delolls noates taken there and he is to give us a true and faithfull Accompt of all. Wee have likewise privately ordered our Delolls there to bring us a true accompt that wee may not be deceived promiseing them new Burgunny :

FYTCHE NEDHAM
RI : TRENCHFEILD
JONATHAN PRICKMAN

Received a Generall from Hugly.

30 At night Came letters from Hugly with a Coppy of a Fort St. George Invoyce for our Imetation :

ACCOMPT CURRANT HUGLY. *Dr.* PER CONTRA. *Cr.*

		Rs.	As	G.			Rs.	As.	G.
Sept.—					Sept.—				
31	To Ballance ..	134151	5	3	1	By Ballance last month ..	71244	7	3
					27	By Bullion ..	62686	6	0
						By Charges Merchandize ..	220	8	0
							134151	5	3

31 Divers Consultation dayes this month has passed nothing offering of a sett Consultation :

FYTCHE NEDHAM
RI : TRENCHFEILD
JONATHAN PRICKMAN

CASH.		*Dr.* Rs.	As.
Sepr.—			
1	To Ballance last month	6000	10¼
6	To Lead for 40 mds: 28 Seer: at 8rs: 2as: Per maund	330	11
27	Quicksilver 20 Seer at 3rs· 13a· Per Seer	76	4
		6407	9¼

PER CONTRA.		*Cr.* Rs.	As.
Sepr —			
6	By Hurry Churn Vaqueell act wood	1000	0
	By Jonathan Prickman for Cureing goods &ca. ..	500	0
16	By Jonathan Prickman to defray charges Generall	300	0
	By Do. for cureing goods	200	0
21	By Fytche Nedham Accompt Sallary from the 25 March to the 29: past ..	90	1¾
	By Ri: Trenchfeild on Do. Acco: from 31: October to the 29: September last ..	90	7¾
	By Jonathan Prickman Do Accompt from the 25 March to the 29: Sept:	44	7
27	By Gunneshamdas on Tanjeebs and Mulmulls bought ..	1000	0
31	By Seerbunds 90: ps: bought ..	159	3
		3384	3½
	By Ballance ..	3023	5¾
		6407	9¼

FYTCHE NEDHAM

Maulda November 1680:

At a Consultation

Present

Thursday. 4

Mr Fytche Nedham Cheife
Mr Richard Trenchfeild
Mr Jonathan Prickman

Presented Suckdeve Ray

Haveing advice from Bajetpore that Suckedeveray Governour of the parts there aboutes hindred our busines and denied to let our goods pass his Country on our Dustick whereby and a letter from him to us his wants were understood therefore it was agreed to send him 1 yard Scarlet and 1 yard Broadcloth ordinary green to secure his friendship to us for that he is reported to be a great theefe who elce possibly after he has let our boate goe may send people to rob them &ca.

Merchants came to buy our silver but came to no agreement.

Calling to minde the great want we have of mony to be giveing out on new Burgunny the Merchants and Shroffs were called to try if could agree for any of the Silver Ingotts now by us before whome essaies were made but could come to no agreement for that they made the Essaies differ very much from our Invoyce soe could come to no agreement nevertheless they desired to try againe another day to which time it is referred. The Accompt of Cash for last month being perused was passed and the remaines being Rups: 3023: 5¾:

Accompt of Cash passed.

FYTCHE NEDHAM
RI: TRENCHFEILD
JONATHAN PRICKMAN

5 Prized White Goods.

6 Do.

Writ to Hugly.

8 Sent letters to the Worshipfull Matthias Vincent &ca. Councell and prized Coloured and White Goods.

Our Crowry forbid the washers and Nurdaes to take our Cloth.

A great Stir was this day at both our Governours betwixt them and our Washers halling them for Curing our goods and forbiding them medling with any more &ca. but that blast we soone calmed by sending Merasied beage with our Vaquell to those Hungry Dogs.

9 Clement Du Jarden and Dudly Pearce arrived here from Cassumbazar.

Writ to Cassumbazar about our Crowry.

10 Sent letters to Cassumbazar about our troubles from our Crowry of forbiding us giveing out Burgunny and the people taking any of us and taking notes of them to that Purpose.

At a Consultation

Present

Saturday. 13

Mr. Fytche Nedham Cheife
Mr. Richard Trenchfeild
Mr Jonathan Prickman

Presented Mera Siad Beage.

Merasirard beage one of Mahometts Race having been our good friend on divers occasions helping to Clear our busineses with our Governours being a noted man for his understanding and continuall Imployment here night and day to Mittigae and keepe peace on all sides (elce tis thought impossible Maulda or theses Governours could not long remaine) wherefore to keep such a friend ready on all occasions it is agreed and thought necessary to present him with the following things viztt. ½ yard scarlet 1½ yard Fine Green 1 knife tipt and wreathed and also the Droga of the Cacherry 1: yard Ordinary red cloth and 1 pair Sissers:

Fy · Nedham
Ri · Trenchfeild
Jonathan Prickman

Theives about towne

14 At Night news was brought us from the fousdar that should looke to our selves for that many people was seen in a wood armed not far from the towne suspected to be theives which made us prepare accordingly.

At a Consultation

Present

Munday 15

Mr. Fytche Nedham Cheife
Mr. Richard Trenchfeild
Mr Jonathan Prickman

Agreed to take the Dusture of the Merchants &ca. for the mony paid them from May to the 16th June

Calling to minde that what mony was given out on Burgunny to Severall in May and to the 16th June past their was no intrest or Dustore taken on Rups. 27558 · according to the Worshipfull Agents late Orders because the people would not by noe meanes (not understanding it) alow those Imposts ordered to be taken but now proposing and urging the same we have in a manner forced them to concent to pay the same tho. most of their goods are prized promising to remember them if they doe our busines well another time with which they seeme contented tho truely We thinke they have hard measure as the goods are Prized and ought to have some consideration wherefore and for their further Incouragement and fastning them to us when their goods are well prized we thinke fitt to give them or some of them a Seerpaw of a Shaull a peece or such like.

Bookes of Accompts &ca. passed

The Generall books of Accompts being perused was passed the Warehouse Accompt also passed and also the Accompt of Charges Generall for last month as followeth Viztt ·

Jonathan Prickman.		*Dr.*			**Per Contra.**		*Cr.*		
Octr.—		Rs.	A.	P.	Octr.—		Rs.	A.	P.
1	To Remaines last month ..	195	0	0	31	By Charges Generall	92	2	0
16	To Cash	300	0	0		By Servants Wages	139	3	0
						By Charges Dyett ..	61	2	3
							292	7	3
						By Ballance ..	199	8	9
		492	0	0			492	0	0

FYTCHE NEDHAM
RI: TRENCHFEILD
JONATHAN PRICKMAN

16 Clement Du Jardon and Dudly Pearce went hence for hugly.

18 Came letters from hugly

19 At Night Mr. Robert Littleton came hither by boate

At a Consultation

Present

Wednesday. 24
Mr. Fytche Nedham Cheife
Mr. Richard Trenchfeild
Mr. Jonathan Prickman

Agreed to present the Peerzadda.

Having found cause in this place by the dayly troubles we have had from our Crowry and Fousdar on every litle trick they can finde and Catch as to make and imploy friends to doe our busines with them sometimes and not be dayly and howerly arguing it our selves this day we went to See peerzadda who is Jagerdar or Mellick of Shaupore and other townes thereabouts where we have a quantity of good White Cloth made and for that he has the report of an Ingenious Young man and for his holynes is highly esteemed here therefore to make him our friend as the way of this Country is it is thought fitt to prevent (*sic*) him as followeth 1½ yard Ordinary Red and ½ yard Ordinary Green 1 knife and 1 paire Sissers:

FY: NEDHAM
RI: TRENCHFEILD

25 Mr. Robert Littleton went hence for Hugly.

At a Consultation

Present

Saturday at Night. 27

Mr. Fytche Nedham Cheife
Mr. Richard Trenchfeild
Mr. Jonathan Prickman

Agreed with Peermanundsaw for the Silver.

Peermanundsaw being called at last we came to an agreement with him for all the Silver Ingotts in our house being 26: at 209 Rups: 12a: good peet of 10: Mass for each 240: Siccaes weight the Silver to be made equall with Rialls : according to which Accompt is to be made allowing Rialls to burne 6: Ruttees 2: Chaule in 1 Sicca Rupee weight to make it fine Silver the Essayes or Chasnees of each Ingott are to be made here but if we doe not agree aboute them they are forthwith to be sent to the Mint of Rajamaull and as they shall there come better or worse we are on both sides obliged to stand to the mony Rups. 5000: is to be paid Munday next and the rest all within 25: daies by degrees from this day:

Fy: Nedham
Ri: Trenchfeild
Jonathan Prickman

A boate of goods sent to hugly.

28 At Night dispeeded a boate qt. 20 Chests coloured goods with Generall Advices to hugly.

29 This Morning sent letters to his worship &ca. Dated the 27th with our Diary for last month.

Sent a boate with goods to hugly.

At Night dispeeded a boate with 17 Chests Coloured Goods with Generall advices thereon to Hugly.

Accompt Currant is as Per last month:

Fytche Nedham
Ri: Trenchfeild
Jonathan Prickman

CASH. *Dr.*

Novr.—		Rs.	As.
1	To Ballance last month.. ..	3023	5¾
8	To Quicksilver 10: Seer at 3r: 13a:	38	2
15	To Acco. Interest for what recd. on 27558 paid Burgunny from the first May to the 16th June at 1r: 4a:.. ..	344	7¾
24	To Lead 2md: 5 at 8	17	0
30	To Quicksilver 20Sr: 3r: 13a: ..	76	4
		3499	3½

PER CONTRA. *Cr.*

Novr.—		Rs.	As.
6	By Jona: Prickman..	500	0
8	By Charconnaes 181 ..	440	5½
10	By Crepoll	303	7
12	By Charconnaes 39 ..	93	3½
	By Orungshies Ps. 3 ..	11	8
13	By Rarityes for 60 Sissers	12	0
	By Orungshies Ps. 29	106	14
16	By Seersuccaes Ps. 15	97	8
	By Orungshies 35 ..	144	14
27	By Cunjemunsaw Principall	1000	0
	By Accompt Intrest 1: month to Do. ..	10	0
29	By Charconnaes Ps. 42	99	12
	By Seerbunds 30	46	15
	By Reyngs 4	20	0
	By Orungshies ..	22	8
	By Weavers Tangeebs	630	0
		3438	15
30	By Ballance ..	60	4
		3499	3

FY: NEDHAM

Factory Records, Maldah 1.

Malda Diary mo. December 1680.

At a Consultatic·

Present

Mr. Fytche Nedham Cheif
Mr. Richard Trenchfeild
Mr. Jonathan Prickman

Accot. of Cash passed

The Accot. of Cash being perused and examined was passed the remaines being found to be Rups. 60. 4½a: the end last month.

Agreed for ground to build a Factory on.

Haveing divers times attempted and used our utmost endeavours to buy the ps: of ground pitched upon by the Worshipfull Matthias Vincent when here (upon good termes) in Vaine, at length Rajaray Chowdry invited us to goe and see a peice of his land lying on the other side the River about 2 little miles distant from Malda which we liked and after many Consults and treaties we Came to an agreement with him, and this day our papers for the said ground bought of Rajaray Chowdry at Mucdumpore was finished haveing the Cozzees Chops and

Congoyes and diverrs other witnesses to them, it is the highest land thereabouts and lyeth pleasantly and Conveniently by the river side which runs there almost due south the extent of our ground by the river is eight Begaes and into the landward seaven Begaes (which makes the whole a long Square) each Begae qts eighty large Coveds of Nine Nailes of an English Yard, it is Judged very Convenient to take soe much ground or more if might have been had that too many of the Natives thatched houses doth not Choake us nor endanger the Honble. Compas. factory (ordered to be built) by fire &ca: by which meanes in other their residences sad effect has been produced.

Paid for the ground

For the abovesaid Ground Rajaray is now paid 300 Rups. not but that the ground is really worth more then double that Summe but because at this time he is in great want of money to pay the Kings Officer his Yearly Rent and in Danger if it be not paid and for that he is in hopes that by our Coming his village may in time become a Citty as it is not unlikely for it Stands exceeding well in the middle of divers great townes of trade where are many great and grevious imposts put on the people and their goods (which is not in this place) which noe doubt will invite many to be our Neighbours. he has given us a writing alsoe that he will not any waies Molest our Weavers, Picars, Delols, Washers, Cundegurs, Nurdyes &ca. to force or other waies to take any Dustore or other Custome of them whatsoever Save the rent for their houses and lands which is a priviledge wee have not any where else, we have this day alsoe delivered him Rups: 300 to bring us bricks thither hee is onely to be allowed the Charges bringing them from Gower in time of the Raines by water which is not far off then and the bricks he gives us for nothing and stone alsoe he promises at that Rate what shall have Occation for which hope will make our Building much the cheaper·

Deld. Rajaray money for Brick and Stone.

Fytche Nedham
Richd. Trenchfeild

day

3 Sorted and packed Goods.

Troubled by our Governors

4 Sorted and packed goods Wee find our Governors Constant to their ill Natures being ready to give us trouble on all Occations and

for want of other, dayly imprisons and hinders our Washers Cundigurs Nurdies &ca. upon weake pretences for which Cause our Vaquel is forced howerly to goe to one petty Durbar or other to release them.

6 Sorted and packed Goods.

7 Ditto.

8 Ditto.

Goods sent to hugly.

9 Dispeeded hence one boat with 13 chests of goods and advice thereof to Hugly

Recd. lettrs. from hugly

10 Came letters from his Worship &ca. in Hugly

Goods sent.

11 Dispeeded one boat qts 12 chests 7 Bailes and 5 bags with advice thereof to Hugly.

Letters sent to hugly with Invoyces of goods.

12 A Generall Letter being drawn up Last night and now read and approved was sent forwards to Hugly with an Invoice dated the 10th Currant of 67 chests of goods amounting to with charges Rups. 46510.

Letters sent to hugly with the goods.

15 A Generall being drawn up read and approved was sent forward to his Worship &ca. Councell in Hugly with Invoice of the last of our this yeares goods Inclosed qts 24 Parcells amounts to together with charges Rups. 9023: 10: 6 and advised alsoe of our Want of Cash to begin our Dadine (*sic*) for next yeare our Weavers now lying Still.

Diary &ca. sent to hugly by Mr. Prickman.

19 Mr. Prickman went hence for Hugly according to his Worship &ca. Councells order and with him sent our Diary and charges Generall to the last November.

Came letters from his Worship &ca. Councell at Hugly.

Fytche Nedham
Richd. Trenchfeild

At a Consultation

Present

Monday. 20 Mr. Fytche Nedham Cheif
Mr. Rich. Trenchfeild

The books of Accots. passed.

The Generall Bookes of Accounts being brought up to this time was perused and passed:

Fytche Nedham
Richard Trenchfeild

At a Consultation

Present

Tuesday. 29 Mr. Fytche Nedham Cheif
Mr. Richard Trenchfeild

Agreed for Cossas.

Persaud Moode being called we Came to an agreement with him for Orrua Cossas 20 Guz: long and 1 broad on 2 patternes which were valued the one at 10r. 12a. and the other at 8r. 12a. which patternes are onely to guide our Judgements at prizing his goods to allow or Cut off according as the goods Shall be better or worse then his Musters therefore on these termes we have delivered him Rups. 6400 for 200 ps. of 12 rs: per ps. and 400 ps. of 10 rs: per ps. Somewhat thinner then the Musters which are to be brought in and prized within 3 mos. and all remaines paid in:

Fytche Nedham
Richard Trenchfeild

Letters sent to Hugly.

30 A Generall was drawn up Signed and sent forwards to the Worshipfull Matthias Vincent &ca. its Contents being cheifly to desire a Supply of money to be giveing out on Putton for white cloth and Coloured goods before the Dutch gett all our Weavers from us &ca:

HUGLY ACCOUNT CURRANT			*Dr.*	PER CONTRA.			*Cr.*
Decr.—		Rs.	As.	Decr.—		Rs.	As.
10	To Sundry Accots.	46510	0	1	By Ballance last mo. ..	.. 134151	5¼
15	To Sundry Accots	9023	10½				
31	To Ballance ..	78617	10¾				
		134151	5¼				

Fytche Nedham
Richd. Trenchfeild

Cash.		Dr.
Decr.—	Rs.	As.
1 To Ballance last mo.	60	4½
To Paranaut at Intst: at 1r. Per Ct...	1610	0
3 To Permanundsaw ..	1275	0
9 To Do.	700	0
14 To Quicksilver 10 rs: at 3r. 13a. Per Sr.	38	2
16 To Permanundsaw ..	1450	0
20 To Do.	1300	0
23 To Do.	3500	0
26 To Do.	3000	0
28 To Acct. Interest on 6400 rs. dadine at 1¼ Per Cent. ..	80	0
	13013	6½

Per Contra.			Cr.
Decr.—		Rs	As.
1 By Accot. Building for 56 Begaes of ground for a factory		300	0
By Rajaray Chowdry on brick and stone		300	0
3 By Jonathan Prickman		500	0
10 By Erendees 400 ps. at 7r. 10a. Per Corge		158	8
By Household Necessaries Vizt:—			
1 Chandeny	31 4		
2 Canats & 1 privy	51 10¾		
1 Gurry & dish to it	17 4		
2 Brass Candlesticks ..	2 1		
		102	3¾
16 By Saltpeter 5 bags qts 2 mds at 81 Siccas the Seer at 1r. 1a. Per md.		10	10
By Rarities 4 knifes brought ..		3	0
By Jonathan Prickman		300	0
28 By Persaud Moode on Orrua Cossas		6400	0
By Cattle for 1 large gray horse ..		324	0
By do. for 1 do. Russet Gray ..		243	12
		8636	1¼
By Ballance ..		4377	5¼
		13013	6½

Fytche Nedham

Malda Diary mo. January 1680-1.

At a Consultation

Present

day 3

Mr. Fytche Nedham Cheif
Mr. Richard Trenchfeild

Accot. of Cash passed. The Accot. of Cash was perused and passed the remaines being found to be at the end of last month Rups. 4377: 5¼ a.

Agreed to take up mo: at Interest.

Haveing been daily a long time supplicated by our Weavers for Dadine their hands being empty and Gunneshamdass a Merchant of this place offering to furnish us with Rups. 17900: good peet and now being a good time to give out Dadine on all our Sorts of goods as well as to keep our Weavers from goeing from us therefore it is resolved and agreed to take the same to lye at Interest (till shall be Supplyed) at 1r. 2a. Per Cent Per month and it is farther agreed to take up what more can be here procured that our Investment be not soe backward as last yeare we being very ambitious as well to doe our utmost for our Honble. Masters proffit as to shew what quantities of goods this place will afford.

Agreed with diverse weavors

Many Weavers and picars being called we Came to an agreement for divers sorts of goods on Musters as follow: Vizt. Seerbunds 500 ps. 40 co: long and 2 broad at 1½ rs. Per ps. Elatchaes 301 ps. to be 30 co: long and 2 broad at 9 rs: Seersuckers 147 ps do: length and breadth at 8 rs. Per ps. Chandenyes 72 ps. do: length and breadth at 6 rs. Per ps. Sooseys 35 ps. do: length and breadth at 51 Per ps. Nehallewars 290 ps at 4 r. 8 a to be 36 co: long and 2 broad Tangeebs 119 ps. fine to be 40 co: long and 2 broad Mullmulls 547 ps fine do: length and breadth and Reyngs 117 ps. do: length and breadth. these are all to be brought in and prized in 3 months time &ca. as at large in their perticuler Notes given in Bengall writing in a Booke for that purpose.

Bought a budgero.

The Dutch Cheif of this place haveing made a handsome Strong Budgero here and being at that time called hence to live at Cassambazar was Content to part with it wherefore it was thought good and agreed to buy it for the use of the Honble. Company in this factory it being cheap and to forbid our people at Poronia buying wood to make one as formerly was ordered.

Generall books passed.

The Generall bookes of Accots. for last month kept by Richd: Prickman was perused and passed.

Fytche Nedham
Richd. Trenchfeild

4 Our Fouzdar sent to us to buy 9¼ yd: fine green cloth haveing earnest Occation for it to finish his Saddle, which was Sent him.

At a Consultation

day Present

Wednesday. 5 Mr. Fytche Nedham
Mr. Richd. Trenchfeild

Haveing made a Beginning in our Dadine the 3d: Instant the Weavers now hearing of it round about begin dayly to flock to us with Some of whome this day we agreed for the following goods on Musters as the 3d: Currant Vizt: 20 ps. Nehallewars 36 co: long and 2 broad Charconnaes 500 ps. 30 co: long and 2 broad Seersuckers 21 ps. 30 co: long and 2 broad Elatchaes 30 ps. 30 co: long and 2 broad Tanjeebs 10 ps. and Mullmulls 10 ps Continued the 6th day.

Agreed for Sevll. goods.

Agreed for goods.

6 This day we farther agreed with the Weavers on the forementioned termes for the following goods Vizt: Nehallewars 280 ps. 36 co: long and 2 broad Charconnaes 140 ps. at 42 rs: per ps. 30 co: long and 2 broad Seersuckers 90 ps. do: long and broad Chandenyes 452 ps. do. long and broad Sooseys 290 ps. do: long and broad at 15 rs: Per ps. Elatchaes 270 ps. do: long and broad at 9 rs: Per ps. Reyngs 10 ps. 40 co: long and 2 broad at 7 rs: Per ps. Tanjeebs 37 ps. fine Mullmulls 347 ps. fine Continued the 7th day.

Agreed for goods.

7 This day we alsoe agreed with more Weavers on the former termes for the following goods Vizt. Reyngs 20 ps. at 7 rs: Per ps. Tanjeebs 38 ps. and Mullmulls 20 ps. Wee likewise agreed with Gunneshamdass for 500 Tanjeebs of 12 rs: Per ps. and 500 ps. Mullmulls of 12 rs: Per ps. and Orrua Cossas 1000 ps. thin and fine of 10 rs: Per ps. these are alsoe to be prized by Musters and he is to be allowed or abated as his goods Shall Come out better or worse as more at large in his agreement written in our booke for that use. Continued the 8th day.

Agreed for goods.

8 This day alsoe we agreed with divers Weavers for the following goods Vizt. Nehallewars 70 ps. Charconnaes 20 ps. Seersuckers 20 ps. Chandenyes 10 ps. Elatchaes 44 ps. Reyngs 50 ps. Tanjeebs 160 ps. and Mullmulls 270 ps. Permanundsaw and we haveing tryed divers Essayes of our Silver here in vaine they not Comeing our right it is now agreed and thought fit to send essayes of each Ingot to Rajamaul to the

Agreed that Ri: Trenchfeild should go with essays to Rajamaul.

mint and that Mr. Trenchfeild goe alsoe to See them done and returne spedily keeping himself as close as possible while he stayes that the Durbar people be not troublesome to him and that they should not know of his being there least it should be ill taken that he visitts them not, which otherwise might prove expensive.

That Mr. Nedham proceed in giveing out dadine.

It is farther agreed that Mr. Nedham proceed in giveing out what Dadine he Can it being a good time besides the advantage we shall have in keeping the best of those Weavers that wrought for us before from the Dutch &ca. Herderam Tewarre a Merchant of this place haveing promised to lend us 50 or 20000 Rupees this day brought in 15500 Rups: peet to lye at Interest till repayed at 1r. 2a. Per Cent Per Mo: which we readily accepted knowing that tis for our Honble. Masters Proffit for otherwise we should loose the Oportunity of haveing two Dadines this yeare and that it is cheaper then Generally we have it at Cassumbazar. It is alsoe further Concluded that Jeamshire Beage our Crowry be presented somewhat to Stop his mouth that he may Ceaze to Molest our people and Weavers &ca.

Fytche Nedham
Richd: Trenchfeild

Mr. Trenchfeild went to Rajamaul.

9 Early this morning Mr. Trenchfeild proceeded for Rajamaul with a quantity of each Ingot of our Silver enough to make essayes.

Came to an agreement with more Weavers for the following goods on termes as before Vizt. Nehallewars 20 ps. Seersuckers 12 ps. and Chandenys 18 ps.

Lead sold.

11 Sould Lead 45 md: 17½ sr: at 8¼ Per md: Hugly weight. Sould more to Rajamaul 9 md: 29 sr: at 9 rs: Per md.

Agreed for goods.

Agreed with more Weavers on the former termes for the following goods Vizt. Nehallewars 10 ps. Charconnaes 100 ps. Tanjeebs 29 ps. Mullmulls 26 ps The Cozzee of Rajamaul is here and presses us for a present mightily. This Evening the said Cozze of his owne accord Sent us a phurd or list of what he expected from us which is a thing never used by any but they hapned to be most such things as the Dutch have (but we never) whither the Bearer was directed to have his Bill accepted.

12 The Crowry Jeameshire beag haveing a long

time troubled our business divers Wayes after Severall disputes and fruitless Complaints this evening we gott him to Come to our factory where all his misactings were understood and promises of firme and lasting friendship on both Sides for the future and he in order thereunto promised to Send us the notes he had taken of our Delols Merchants Picars &ca not to have to doe with us againe &ca. for which tis thought fitt to give him (the thing he soe often trouble us for) a Present as was before agreed on in Consultation Vizt 1: yd Scarlet: 1: yd ord: green cloth 1 very large fine china dish and 19 other great and small peeces china Ware and 1 qt Rosewater and to his Vaquel Sudharre Caun 2 china platters and to the Meirda of his Cutcherre ½ yd ord: cloth.

Presented the Crowry.

Agreed with weavors.

Agreed with more Weavers for goods of the former termes Vizt. Nehallewars 20 ps. Charconnaes 120 ps. Reyngs 20 ps. Tanjeebs 36 ps. and Mullmulls 36 ps.

day

Agreed with weavors for goods.

13 Farther agreed with Weavers on termes as the 3d: Currant Vizt Nehallewars 30 ps. Charconnaes 90 ps. Seersuckaes 50 ps. Chandenyes 70 ps. Soozeys 30 ps. Reyngs 147 ps. Tanjeebs 148 ps. Mullmulls 157 ps.

Ri: Trenchfeild came from the Mint.

14 Mr. Trenchfeild came from the Mint at Rajamaul bringing an Account of the Essayes of all our Silver Sold as they were made there before him Vizt:

						mass.	rutt.	ch.
Ingot No.	56	better	13	dwt:	burnes..	0	2	4
	57	,,	17	,,	,, ..	0	1	4
	58	,,	17½	,,	,, ..	0	0	5
	61	,,	10	,,	,, ..	0	3	0
	62	,,	14	,,	,, ..	0	2	0
	63	,,	13	,,	,, ..	0	2	4
	64	,,	17½	,,	,, ..	0	1	0
	65	,,	17½	,,	,, ..	0	0	7
	69	,,	13½	,,	,, ..	0	2	0
	70	,,	14½	,,	,, ..	0	2	0
	71	,,	11	,,	,, ..	0	3	2
	75	,,	8½	,,	,, ..	0	3	4
	76	,,	7½	,,	,, ..	0	4	4
	77	,,	16	,,	,, ..	0	1	2
	117	,,	0	,,	,, ..	0	7	0
	118	worse	10½	,,	,, ..	1	4	2
	119	,,	3	,,	,, ..	1	0	0
	120	,,	3½	,,	,, ..	1	1	0

				mass.	rutt.	ch.
137	better	4½	dwt: burnes..	0	5	4
138	worse	6	.. .. ..	1	1	0
139	.	0	.. .. ..	0	7	2
140	.	17	. . ..	1	6	0
145		7	.. .. ..	1	2	0
146	..	8	.. . ..	1	0	4
147	..	4	. .. ..	1	2	4
148	better	1	.. ,, ..	0	6	6

now besides this there is the ashes and pots wherein the Essayes were made, to be washed and burned out of which will Come Something which must be deducted.

16 Out of the ashes and potts above mentioned being ordered by a Goldsmith here Came out as much as qts 2 chauls to each Ingot which is to be deducted for what each Ingot is made to burne above.

Presented Allumchund

17 Allumchund Sekedar of Buttedah Gopolpore purgona (wherein o· new ground is) and many of our Weavers alsoe Comeing to see us begged 1¼ yds Red cloth Ord· to make him a Saddle which was given him.

Deld: dadine to weavors

18 Agreed with and delivered Weavers Dadine on the former termes for the following goods Vizt Charconnaes 30 ps. Seersuckers 60 ps. Elatchaes 20 ps. Reyngs 34 ps. Tanjeebs 106 ps. Mullmulls 60 ps

Alsoe we agreed with and delivered Dadine to Gungaram and Sambdass Jointly being Picars of this place for the following goods Vizt Tangeebs 100 ps and Mullmulls 150 ps. they are alsoe tyed to put a Certaine Number of threads in the Warp of each Sort of cloth as all the rest are which hope will make our goods much better and evener this yeare then last.

25 Sent 1 knife haveing before promised it to the Man that made our Essayes at the mint.

Dadine given

Agreed with and delivered Weavers Dadine as before on the following goods Vizt Nehallewars 40 ps. Charconnaes 110 ps. Reyngs 25 ps. Tanjeebs 59 ps and Mullmulls 17 ps.

26 Delivered more to Weavers as follow Vizt Charconnaes 160 ps. Chandenyes 8 ps. Sooseys 10 ps. Tanjeebs 45 ps. and Mullmulls 47 ps.

Agreed for Cossaes with Puttunnemull.

27 Came to an agreement with Puttunemull for 1000 ps. Cossas on 4 Musters to be 40 co: long and 2 broad to be brought in and prized in 3½ mos· from this time.

Quicksilver sold. 29 Sould this day 5 seers Quicksilver at 4 rs. Per Seer.

Money Sent to Rajamaull. 31 Sent a Bill Exchange for 200 Rupees to Sukedeeve Vaquel of Rajamaull to pay for the wood bought for Hugly factory and alsoe for what was Spent to free the Salt peter boats when there.

Accot. Currant Hugly is as last mo:

Fytche Nedham
Richd: Trenchfeild

CASH. *Dr.*

Janry.—		Rs.	As.
1	To Ballance last mo.	4377	5¼
	To Permanaundsaw	7400	0
3	To Weavers Tanjeebs	630	0
	To Gunnesham at Int. at 1 r. 2 a. Per Cent	17900	0
4	To Permanund ..	3850	0
6	To Ditto	1000	0
8	To Ditto	1000	0
	To Herderam Tewarree at Int. at 1 r. 2 a. Per Cent ..	15500	0
11	To Hurresaw ..	22	8
	To lead 45 md. 17½ sr. at 8¼ Per md. ..	374	13¼
	To Ditto 8 md. 29 sr. at 9 rs Per md.	78	8¼
12	To Paranaut at Intst. at 1 r. 2 a. Per Cent	1000	0
15	To Permanundsaw ..	8000	0
18	To Ditto	2755	0
20	To Ditto	960	0
24	To Ditto	7000	0
26	To Ditto	4000	0
27	To Ditto for a bill ..	126	7
	To Ditto	10000	0
29	To Quicksilver 5 sr. at 4 rs. Per Seer	20	0
31	To Ramkisno and Purtemull ..	188	12
	To Accot. Intst. on 86498 Rups. dadine at 1¼ r. P. Ct.	1081	3¼
	To Paranaut at Intt at 1 r. 2 a. Per Cent	1450	0
	To Permanund ..	702	10½
		89417	4¾

PER CONTRA. *Cr*

Jan.—		Rs.	As.
3	By Richd: Trenchfeild	300	0
	By Weavers Seerbunds.. ..	875	0
	By boats for 1 large Budgero ..	324	0
	By Rosewater for 1 chest	25	0
4	By Gunneshamdass	22440	12
12	By Accot. presents for 22 ps. china ware .. .	27	0
18	By Richd: Trenchfeild	500	0
	By Gungaram & Sambdass ..	2700	0
27	By Puttunor ll ..	10000	0
30	By Weavers Tanjeebs	10094	0
	By do. Mullmulls ..	15126	0
	By do Reyngs ..	2961	0
	By do. Eiatchaes ..	5955	0
	By do. Seersuckers..	3200	0
	By do. Chandenyes	3780	0
	By do. Orungshies ..	1825	0
	By do. Charconnaes	4522	8
	By do. Nehallewars	3510	0
31	By Rajamaul residence for wood & charges of our peterboats passing, sent the Vaquel there ..	200	0
		88365	4
	By Ballance ..	1052	0¾
		89417	0¼

Fytche Nedham

Malda Diary mo. February 1680-1.

At a Consultation

Tuesday. day 1 Present

Mr. Fytche Nedham Cheif
Mr. Richd : Trenchfeild

Last mos : accot : Cash passed.

The Accot : of Cash for last mo : after Perusall was passed the remaines being Rups : 1052 : 0¾a.

Agreed with Gunnesham for all the Compas lead at 8 r. 10 a. Per md.

Why lead sold well here.

We alsoe Came to an agreement with Gunnesham for all the Honble : Compas : lead in our factory at 8 r : 10 a : Per md : to pay ready money good peet of 10 Mass weight. The Reason as we are informed by Merchants that our lead is Sold is that none is now Sold at Hugly to these parts to Spoyle our Markets by which meanes if Continued we Conceive it possible to dispose of more of the Honble : Companies lead then hitherto has been done and at better rates whilst none of those pettyfoggers (our Gomastehs) has any to undersell us or forestall our Markets.

Agreed to make Sevll. thatch conveniencies at Mucdumpore.

Great part of our wood for our Building being Come from Poronia and many labourers now at our new ground it is agreed to build there for the present Some thatched Conveniences as well for our Stay there Sometimes as other things of absolute necessity and alsoe to build a brick place with what speed possible where our intended Cookeroome and bakehouse Shall Stand, which till the other buildings are finished may Serve for a Godowne to Secure the Compas : puttun goods from fire good part of which God willing we intend to prize and Cure there which will Save the Chop and other charges amounting to above 2 a. Per ps., which will be Considerable, though what goods are made in and about Malda must for this time pay those imposts and for the future we hope there being soe many Weavers on the other side the river that Shall have little Occation of imploying any here they being most Colour Weavers of which we shall find enough for our turne on the other side.

Agreed to make a ditch about our new ground.

It is farther thought Necessary and agreed on to make a Ditch or trench about our new ground of 3 or 4 Coveds wide (except towards the river) alsoe to endeavour to Stop up the thorough faire or Way by the River by forcing a way round our ground which is Supposed may much easier be done now then hereafter which way and keeping up the banck of said Ditch will be sufficient landmarks hereafter and keep the Natives from incroaching on our ground, there is alsoe a low plat in our land neare the banck of the River which is Judged hurtfull to our ground as it is by reason of the raine water Standing there and running that way in to the River which in time may make a Breach but filled up will turne it into the landward which is much better, therefore and earth lying neare it tis thought Convenient and ordered to be filled up the cheapest way possible which is Judged about a month hence at the dead time of the yeare when poor people have little to doe will worke for very little rather then be Idle.

Agreed with weavors for goods.

Divers Weavers being Called we Came to an agreement with them for the following goods on Dadine on the said termes as the 3d past mo: Vizt. 4 peeces Elatchaes 7 ps. Reyngs 30 ps. Tanjeebs and 40 ps. Mullmulls.

Tooke up money at Interest.

Cunjemunsaw brought in 6200 Rupees: to lye at Interest in our hands for 1 r: 2 a: Per Cent Per mo. till repayed:

Fytche Nedham
Richd Trenchfeild.

Our Crowry went to Maxoodavad.

2 Jeameshire beage our Crowry went thence this day for Muxodavad

Agreed for goods with severall.

Came to an agreement with Muttucksaw. Treporesaw and Muctaram Joyntly on Musters for 200 Tangeebs and 200 ps. Mullmulls on the Same termes as with others before, and alsoe with Divers Weavers for the following goods Vizt. 100 ps. Charconnaes at 4 r: 8 a: Per ps. 10 ps. Sooseys 30 ps Tangeebs and 30 ps Mullmulls.

Our Crowry arrived from Muxoodavad, and presented 1 qrt. Rosewater.

14 Jeameshire beag Came back from Muxodavad who being weary after his Journey Sent to us for some Rosewater and 1 quart bottle was accordingly Sent him.

Agreed with Cosseram for goods.

Presented Sultan yaur beag.

Came to an agreement with Cosseram Saw for 25 ps. Tangeebs and 25 ps. Mullmulls on Musters as before, Sultaun Yaur Beage the Droga of the mints Son Came hither to visit us being sent by his father for what may easily be guessed wherefore that he should not wholly loose his labour we presented him as follows Vizt. 2 fine large wax figures in one box 1 Triangular glass and 1 quart Rosewater.

Agrood with weavors for goods.

16 Agreed with Weavers for 20 ps. Tanjeebs as before.

Presented our Fouzdar with 3 seers copper

18 Ramabeag our Fouzdar Sent to us to buy 5 or 6 Seers Copper of which we had none but understanding his meaning and not willing to displease him we bought 3 seers and sent him for which he was very thankefull and returned us many Complements.

Arrived letters from Rajamaul.

20 Came letters from our Vaquel at Rajamaul advising us that Mirza Rajub Alle who is Buxe and Wacka Nevice there is alsoe made Ameen for the King there in the roome of Meir Jaffer who now has noe Imployment but Droga of the Shar which is little worth.

At a Consultation

Present

Munday. 21

Mr Fytche Nedham Cheif
Mr. Richard Trenchfeild.

Agreed with Simbodass for goods.

The genll: books passed.

Mr. Trenchfeilds Accot passed.

Simbodass being called we Came to an agreement with him for 200 ps. Tanjeebs and 200 ps. Cossas on Musters very fine and good as before with others The Generall bookes of Accots: for last month were read and passed.

Mr. Richd: Trenchfeild brought in his Accot of Charges Generall for the last mo: which was perused and passed Vizt.

Richd: Trenchfeild		*Dr.*			Per Contra.		*Cr.*		
Janry.—		Rs.	As.	P.	Janry.		Rs.	As.	P.
3	To Cash .	300	0	0	31	By Charges Genll.	138	7	0
18	To Ditto .	500	0	0		By Charges Cattle	17	1	14
						By Servants Wages	173	10	4
							329	0	2
						By Charges Dyett	64	16	0
							393	16	2
						By Ballance ..	406	2	14
		800	0	0			800	0	0

Why our charges rise soe high.

The Occation of our charges last mo. riseing soe high is because the expences goeing to the mint to make essayes of our Silver &ca. was put to it and alsoe Servants Wages by Reason of keeping divers peons extraordinary for our business in hand at Poronia &ca and likewise Dandyes to our Budgero which doe all manner of Worke in our new building as well as in our house which otherwise would cost more to hire people for every perticuler Service therefore tis thought Convenient to have them Continued in monthly pay which oblidges them to be at hand at all Seasons by night as well as by day.

The Accot: Currant Hugly is as last month

Fytche Nedham
Richd: Trenchfeild.

CASH. *Dr.*

Febry.—		Rs.	As.
1	To Ballance last mo.	1052	0¼
	To Cunjemunsaw at Intst at 1 r. 2 a. Per Cent .	6200	0
	To Persaud Moode ..	133	3
5	To Quicksilver 1 md. 25 sr. at 4 rs. ..	260	0
18	To Permaundsaw ..	3800	0
19	To Muctaram &ca. ..	237	1½
	To Crepoll ..	1613	13
	To Moneram ..	338	11
	To Accot: Intst: recd: on 11025 Rups. given out dadine at 1¼ Per Cent ..	137	13
		13772	10¼

PER CONTRA. *Cr.*

Febry. -		Rs	As
2	By Muttucksaw &ca on goods ..	4400	0
16	By Weavers Charconnaes 100 ps.	450	0
	By do. Orungshies 10	50	0
	By do. Elatchaes 4	36	0
	By do. Reyngs 7	49	0
	By do Tangeebs 105	1290	0
	By do. Mullmulls 95	950	0
18	By Richd: Trenchfeild ..	300	0
	By Simbodass his remaines ..	143	6
	By do. on goods ..	3800	0
	By Accot: presents Vizt: 1 box with large figures 8 0 1 Triangular glass .. 2 8	10	8
		11478	14
28	By Ballance .	2293	12¼
		13772	10¼

Fytche Nedham.

Malda Diary mo. March 1680-1.

day

Great fires in Malda.

4 Here has been in Malda in these three last dayes 8 or 10 fires that Malda is almost burned

The dutch Second arrived.

This Evening the Dutch Second Senr: Oosterhoof arrived here from Cassumbuzar.

Menerams partner arrived from Dacca.

22 This day Came from Dacca hither Monerams Partner Jaddodass who has brought with him order from Hernaram Ray to receive from Jeamshire Beag the Ezarra of the Chappa Maul, Nurd Maul and the Guzzer Gaut of Malda which was immediately delivered him and tis said alsoe that Jeamshire Beage will be Suddenly Taggeered of his Crowries place.

Mr. Prickman & S: Anthony arrived from Cassumbuzar.

26 Mr. Prickman and Samuel Anthony with Mis: Story Arrived here from Cassumbazar bringing with them Rs 51000 Accot· the Honble: Company with Advice thereof from the Cheif &ca. there

Accot: Currant Hugly *Dr.*	Rs.	As.		Per Contra.	Rs.	As. *Cr.*
To Ballance	. 141681	10¾	1	By Ballance last mo.	78617	10¾
			16	By Sundry Accots	10574	0
			28	By Cash from Cassr:	51000	0
				By do: recd: here	1490	0
					141681	10¾

Fytche Nedham
Richd: Trenchfeild

CASH.		Dr.	
March—		Rs.	As.
1	To Ballance last mo.	2293	12¼
	To Permanundsaw ..	400	0
16	To Quicksilver 2 mds: at 4 rs: Per seer	320	0
	To do: 1 md: at 4 r: 3 a: Per Seer ..	167	8
26	To Permanund ..	738	0½
28	To Accot: Currant recd: from Cassa:	51000	0
	To do: recd: here ..	1490	0
31	To Elatchaes for 9 ps. used	66	8
	To Chandenyes 4 ps.	25	0
	To Seersuckers 1 ps.	8	0
	To Mullmulls 1 ps. ..	8	2
		56516	14¾

PER CONTRA.		Cr	
March—		Rs.	As.
18	By Accot: presents for 5 shauls to be given our Delols and Merchants &ca. as formerly agreed on ..	60	0
25	By Richd: Trenchfeild	700	0
29	By Gunneshams principall	17900	0
	By Accot: Interest on do. 2 mo: 24 daies	563	15½
30	By Herderam Teware principall ..	15500	0
	By Accot: Intst: on do. 2 mo: 24 daies	465	2¼
	By Cunjemunsaw principall ..	6200	0
	By Accot: Interest on do: 1 mo: 27 daies	132	11¼
31	By Paranaut principall	4060	0
	By Accot: Interest on do. ..	124	11½
	Fytche Nedham the ½ of ½: a years Sallary to the 25 March ..	88	14¼
	By Richd: Trenchfeild on do: Accot: half a year	66	10½
	By Jonathan Prickman on do: Accot: half a yeare	44	7
	By Samll: Anthony on do: Accot: half a yeare ..	44	7
		45950	15¼
	By Ballance ..	10565	15½
		56515	14¾

Fytche Nedham

Malda Diary mo. Aprill 1681.

day

3 At noon Came a Genll: from his Worship &ca. in Hugly.

At a Consultation

Present

Munday. 4th

Mr. Fytche Nedham Cheif
Mr. Richard Trenchfeild
Mr. Jonathan Prickman
Mr. Samuel Anthony

Last mos: Cash passed.

The Accot: Cash for last mo: the Remaines being Rups: 10565: 15½ a: was passed.

Agreed to send Ruddernum with Allabardy to Poronia.

The Councell haveing Called and discoursed divers Jentue people at last pitched on Ruddernum a Cuttery who is well acquainted at Poronia and related to the Nabobs Duan whose Wages we now make 10 rs: Per mo: and Joyne him in Comission with the old Armenian to go on the discovery of what Saltpeter Dryed Ginger Turmerick &ca: Merchandize may be had yearly at Poronia and its adjacencies and at what rates and the Charge of Portrage to Hugly and what River Conveyances are thence besides that by way of Rajamaul and what stops and troubles may be expected by the way &ca: more perticuler in their Instructions given them and then after a full enquiry and understanding had of those parts to returne with Musters of Saltpeter &ca: and a Diary Accompt of their Voyage that after perusall of which if it Shall appeare any thing profitable to our Masters Affaires we may forthwith advise thereof to the Worshipfull Matthias Vincent &ca: Councell that timely orders may be given in Case of any Investment to be made there this yeare alsoe in persuance of his Worship &ca: orders and for their better reception there by the Nabob &ca: Governors of those parts a Small present of Scarlett Broadcloth Christaline Ware &ca: is ordered to be gott ready to goe with them to whose discretion it is left to Present those things or not as they shall see the Nature of the business and the Honble. Companies Honour in Such Cases requires the Perticulers Vizt:

Scarlott: 5: yds.	Cristaline Ware Vizt.	
Orda: red clo: 8: yds.	1 large Caudle Cup & Cover	1 Chest Rose-water.
Do: Green 8: yds.	2 do: Small with Covers.	
	2 large Gurgolet bottles.	

Rarities Vizt 1 Multiplying glass, 3 Trianguler glasses 3 pr: wrought Scizzers 3 do: Orda: 4 pr: White Spectacles 1 do: green.

Jonathan Prickmans Accot: of Charges Generall for mos· Novr· and Decr: being now delivered in was passed as follows Vizt.

JONATHAN PRICKMAN.			*Dr.*	PER CONTRA.			*Cr.*
Novr.—	Rs.	As.	P.	Novr.—	Rs.	As.	P.
1 To Ballance last mo.	199	8	9	30 By Charges Generall	181	0	0
To Cash	300	0	0	By Servts: Wages	143	14	3
To Do: Accot: Packing Stuff ..	800	0	0	By Charges Cattle..	12	13	3
To Do: Accot: Washing &ca:	900	0	0		337	12	6
				Per Charges Dyet ..	69	0	9
				By Packing stuff at large in our bookes ..	836	6	0
					1243	3	3
				By Ballance ..	956	5	6
	2199	8	9		2199	8	9
Decr.—				Decr.—			
1 To Ballance last mo.	956	5	6	31 By Charges Generall	108	4	0
3 To Cash	500	0	0	By Charges Cattle..	19	2	0
16 To Ditto .. .	300	0	0	By Servts· Wages	144	6	0
					271	12	0
				By Charges Dyett..	71	11	0
	1756	5	6		343	7	0

Why the Charges Merchandize not entred here.

Deld. the godowne &ca: charges to S.A.

His Accot: of Charges Merchandize being entred at large in our Generall bookes is omitted here the Ballance of his Accot· Currant is Rups. 413: 5½ a. which the Councell now orders to be paid to Samll. Anthony and to Invest him with the Charge of the Goodowne &ca: belonging to the thirdship according to Orders from his Worship &ca.

Charges Genll: for March passed.

Richard Trenchfeilds Accot: of Charges Generall for mo. March was perused and passed Vizt:

RICHD: TRENCHFEILD.		*Dr.*			PER CONTRA.		*Cr*		
March—		Rs.	As.	P.			Rs.	As.	P.
1	To Ballance last mo.	365	12	1	31	By Charges Generall	120	2	3
	To Cash .. .	700	0	0		By Charges Cattle..	16	1	9
						By Servts: Wages	177	0	6
							313	4	6
						By Charges Dyett..	64	1	6
						By Accot: Building	548	9	1
						By Samll: Anthony for the Ballance paid him ..	139	13	0
		1065	12	1			1065	12	1

Fytche Nedham
Richd: Trenchfeild
Jonathan Prickman
Samll: Anthony.

day

The Dutch factory be sett by the Crowries people.

10 All this day and last night the Dutch factory was beset by the Crowries people and the Rabble on the towne Some blows passing now and then on both sides and their Vaquel had not the Fouzdar rescued him in his owne house had been shamefully beaten at the Durbar as Some of their Servants were alsoe this Evening an order was published by him with beat of a Drum thro out the towne that whoever Should help the Dutch with Victualls, fire, Water, Straw, or provender for their Cattle their houses and all they had Should be forfitted to the King and alsoe those of their Servants or ours that are of Malda. of which we have not above 2 or 3.

Wednesday. 11 The Stir betwixt the Dutch and the Crowry Comeing before the Cozze &ca: in the Adolut the Dutch gott the better soe that now on both sides Mohuzzers are preparing to be Sent to Dacca.

12 The Dutch still keep house least Stirring out they should have Violence offered them by the angry Crowry who is their neare Neighbour.

At a Consultation
Present

13 Mr. Fytche Nedham Cheif
Mr. Rich Trenchfeild
Mr. Jona. Prickman
Mr Samll. Anthony

The Genll: books deld: to Jona: Prickman.

Haveing now evened all accots: of this factory and delivered the Warehouse &ca. to Samll: Anthony the Genll: Bookes of Accots: being brought up to this day is now in Councell delivered to Jona: Prickman our new enordered Second of this place soe that Richd: Trenchfeild may to morrow morning be dispeeded hence to his Purser Genlls: Imployment Conferred on him in Hugly.

Fytche Nedham
Richd: Trenchfeild
Jonatha: Prickman
Samll: Anthony

Mr. Trenchfeild went to hugly.

14 Mr. Richd: Trenchfeild went hence towards his Station in Hugly.

The fouzdar visited us.

15 Ramabeag our Fouzdar Came to visit us this morning very Curteously to whome we gave a qrt. bottle rose water.

The Catwal visited us.

16 The Cattwall of the towne Came this morning to see us protesting how ready he was to Serve us on any Occation and in the afternoone Sent to desire Some rosewater haveing Some friends Come to him whereupon a qrt bottle was sent him.

The Crowry fell at the dutches feet.

The Crowry went to the Dutch and fell at their feet to forgive the last Insolence offered them: which was done, the fouzdar being present who also Sollicited for him.

At a Consultation

Present

Satturday. 16

Mr Fytche Nedham Cheif
Mr. Jonathan Prickman
Mr. Samuel Anthony

Agreed for goods.

Sambdass and Ottaram being called divers times at length Came to an agreement with them for 200 ps. Cossas on a very good Muster at 7 rs. per ps. to be 40: co long and 2 brd: allowing them 4 mos: to bring them in

		Rs
Charconnaes	30 co: long and 2 brd: 100 ps. at 4 r: 8 a: dadine	450
Tangeebs ..	40 co: long and 2 brd: 60 ps. at divers rates as they Could take them	720
Mullmulls ..	do. length and breadth 70 ps. at 10 rs. per ps. ..	700
		1870

Which abovesaid goods are all to be prized according as they Come out better or worse then their Musters:

Fytche Nedham
Jonathan Prickman
Samuel Anthony.

Presented the Cozze with 2 quarts rose-water.

18 Our Cozzee Sent a letter to us to desire Some Cloves and Mace &ca. for his Uncle the Cozzee of Rajamaul for Ingredience at a feast on his sons birth day which was neare who was civilly answered that we had none nor did we trade in such things but doubted not but the Dutch Could help him with what Should have occation for nevertheless that they Should not thinke themselfes slighted we Sent him 2 qrts: rose-water which possibly may please as well.

At a Consultation

Present

Tuesday

19 Mr. Fytche Nedham Cheif
Mr Jonathan Prickman
Mr. Samuel Anthony

Agreed for goods

Many Weavers pressing us for Dadine Some of which being knowne and approved by our Delols and us with whome we agreed for the following goods on Musters as before on Dadine at 3 mos time Vizt :

		Rs.
Charconnaes	30 co: long and 2 brd: 100 ps at 3 r: 8 a: Dadine	350
Do	.. 30 co: long and 2 brd: 40 ps. at 4 r: 8 a: ..	180
Reyngs	.. 40 co: long and 2 brd: 10 ps. at 7 r: ..	70
Tangeebs	.. 40 co: long and 2 brd: 119 ps. at divers rates ..	1446
Mullmulls	.. 40 co: long and 2 brd: 171 ps. at 10 rs: ..	1710
		3756

Ruddermun not being ready sen[t] Hergolol with Allabardy to Poronia

Some time after our agreement with Ruddermun the Cuttery writer to goe to Poronia with Allabardy even Just as they were dispeeding thence Came news from Rajamaul of some trouble hapning there to Some of his Relations which made him post thither to releive them promisinge to returne presently but after many daies passing and he not appearing and the best time of the yeare being the dry time Spending itt self soe fast we resolved and have taken another in his place Called Hergolol and agreed with him for 7 rs. per mo: to goe with Allabardy on the Peter desingne to Poronia who both are ordered to act according to the Instructions given them in Persia and Hindostan writing whose Coppy is here under sett downe Vizt.

Orders for Allabardy and Hergolol.

Orders and Instructions for Allabardy and Hergolol goeing to Poronia Vizt.

To enquire of river passages.

Not to quarrel one with another.

You are to goe hence to Poronia with what Speed you Can makeing enquiry of the river wayes as you goe but not to goe out of your way for it. You are to have a Spetiall Care you doe not quarreli one with another for Superiority for take notice that you are both in Commission Joyntly to act together or a part as need requires and not one to say to the other that is your business and not mine except in the business of writing which the Jentue must doe tho not without the Councell or advice of Allabardy moreover now at your departure from Malda you are both to begin and keep a Diary in one booke betwixt you of all your proceedings with the dayes of the month duely annexed not omitting your very discourse with people in your enquiries the Cheif heads of which are to be as follow Vizt.

To enquire what quantity Saltpeter and Turmerick procureable.

To learne how much Saltpeter fine and Course may yearly be had at or about Poronia now and what may other yeares be expected.

To know what Turmerick may be had in those parts and alsoe dryed Ginger with their prizes.

To enquire what time to give out dadine.

To learne the exact and cheapest time or times for giveing out Dadine on the abovesaid goods and the manner of giveing it out and receiving it in.

You are alsoe to take an Accot: of the differences of the prizes and quantities to be had of those goods in the severall townes where you goe.

To try all weights.

Take an exact accot: and try all weights where you Come noteing their difference in your Diary.

	ACCOT: CURRANT HUGLY. *Dr.*	Rs.	As.
March—			
25	To Sallary payable in England ..	452	$3\frac{2}{12}$
Aprill—			
30	To Proffit and loss to even that Accot: ..	3278	$2\frac{3}{4}$
	To Ballance being the neat stock of this factory now remaining	137951	$4\frac{10}{12}$
		141681	$10\frac{3}{4}$

	PER CONTRA. *Cr*	Rs.	As.
Apll.—			
30	By Ballance last mo. ..	141681	$10\frac{3}{4}$

Fytche Nedham
Jonathan Prickman
Samuel Anthony.

	CASH. *Dr.*	Rs.	As.	P.
Apll.—				
1	To Ballance last mo ..	10565	15	6
12	To Moneram Delol	1618	14	0
	To Crepoll ..	569	8	0
23	To Accot: Interest on 7498 Rs: Dadine at 1¼ per Cent ..	93	11	6
	To Moneram &ca.	4	13	6
	To Pursotum and Rajeeb ..	39	7	6
	To Fytche Nedham over pd. him in Sept. last ..	6	2	4
30	To Permanundsaw	139	0	0
	To Ramkisson and Pertemul ..	230	13	0
		13268	5	4

	PER CONTRA *Cr.*	Rs.	As.	P
Apll.—				
9	By Samll: Anthony ..	300	0	0
12	By Cattle for 1 browne horse	340	0	0
	By Rajamaul residence paid the Vaquel ..	20	0	0
16	By Samll. Anthony	400	0	0
	By Sambdass and Ottaram ..	1400	0	0
21	By Voyage to Poronia paid Allabardy add Hergolol for expence ..	200	0	0
	By House Necessaries and stores for 1 pr: large Persian Carpets	130	0	0
	By boats for 1 small Pattella for a ferry boat at our new factory ..	22	4	0
	By Rosewater for 3 chests ..	75	0	0
30	By Weavers Charconnaes ..	1260	0	0
	By do. Reyngs ..	70	0	0
	By do. Tangeebs ..	2238	0	0
	By do Mullmulls..	2530	0	0
	By Samuel Anthony ..	400	0	0
	By Treporesaw ..	263	12	0
		9649	0	0
	By Ballance ..	3619	5	4
		13268	5	4

Fytche Nedham

Malda Diary mo. May 1681.

At a Consultation

day Present

Munday. 3 Mr. Fytche Nedham Cheif
Mr. Jonathan Prickman
Mr. Samuel Anthony.

Last mos: Cash passed. The Accot: of Cash being perused was passed the Remaines being at the end last mo: Rups 3619: 5a: 4p: which was what at this time offered.

Fytche Nedham
Jonathan Prickman
Samuel Anthony.

Presented Allum chu[n]d. 7th Presented Allumchund seekdar of Butteah Gopollpore ¼ yd: fine green cloth to cover his Sword.

Arrived letters from Poronia. Came letters from Allabardy and Hergolol at Poronia advising that the Nabob was gone to the Camp at Durbunga and left Boola Caun Fouzdar there in his place who they Say will not give them leave to range the Country in that Nature as they would not trade as they pretend Custome free without the Nabobs leave there, he hath sent a letter to him to have his perwanna for us to have free egress and regress and to trade without Molestation in his Dominions &ca.

Sent letters to Poronia. 10 Sent letters to Allabardy and Hergolol at Poronia Commending them for getting Boola Cauns letter to the Nabob and that manner and advized them to live friendly and to be very dilligent in their business that the[y] may returne the sooner.

Our goods stopt by the Fouzdars peons. 16 Our Orrua goods whome the Master of the Chop (who has rented the same) and the Fouzdar sent Peons to force them hither that they might stop them till our Merchants paid the Chop &ca. but we haveing foreknowledge thereof Sent Peons alsoe to hinder them Comeing to Malda and to Carry them to our new factory which they did.

day

The Fouzdar Call[d] our delols and Picars. 17 The Fouzdar in the behalf of the Ezadar Called all our Delols and Picars &ca and forced them to give a writing not to prize to us any goods but what should be Chauped &ca.

18 The Fouzdar and Cozze &ca. sitting in the

The Ezardar complains of us to the Governors.

Our Vaquel Called.

Adollut the Ezardar Came thither to Complaine of us where upon divers peons one after another was Sent for our Vaquel to answer to the Matter alleadged against us who after Instructions given him went, where after a few questions the matter not being Criminous the Court ordered that the Ezardar should Come to us and end his business.

The Ezardar came to visit us.

19 This Morning the Ezardar Came to us who being a Merchant newly Come from the inlandward and not knowing well our Customs and priviledges thought himself much wronged and began to be very high with us till at length and shewing him our Perwanna &ca. he Could not deny but that we had reason for what we did. tho twas much to his Dammage Vizt. he is to gett dayly by his Ezarra 80 rs: and what is less he must disburse out of his owne pocket haveing rented it of Hernaraine whereas at this time he gets not of it above 8 or 10 rs: per day, Wee are truly a great hindrance to him by reason we keep all our goods at our new factory at Mucdumpore (which payes noe Chop &ca.) except what is made in Malda and in the bounds of this Government which not being much and to avoyde giveing Occation of Offence to them we house in Malda resolving to Cure them here alsoe unless they put any Stop in our Way which will be a sound and faire pretence to pack up and Carry them alsoe to our new factory to perfect the Cure of them there and by that meanes to defeat their designes and keep them in more awe of us, their power is the better backed for as much as Malda is the Nabobs Jaggeer and is rented of him by Hernaraine Congoy of Bengall to whome he tells us he intends to draw up and send a Mahozzer against us for denying to prize and Cure all our goods this yeare in Malda (that he might have the imposts on them) as we did the last yeare for want of a Conveniency on the other side the river which now we have and out of his Jurisdiction.

The Ezardar desires a Mohozzer may bee drawn up against us.

The Ezardar went this Evening to the Cozze telling him what answer he had from us and Desired therefore a Mohozzer might be drawn up against us and Sent to Dacca but he refused it, tilling him twas a Matter of Toarra and not of Sherra and would not bare it, yett he advised him to write to Dacca about us which might doe as well, after this he went to the Fouzdars againe about it, who answered that he Could not meddle with us without an order from Dacca, we haveing done nothing but what the priviledges of our phermaund allows soe he remaines fretting his grease and Councelling what to doe

20 He went againe to the Cozzee where he had the same answer as before.

Allumchund and his Son presented with 2 knifes.

24 Allumchund Sekedar and his Son haveing of a long time desired each a knife being now Mangoe time and now Comeing to our house two plaine knifes were given them.

This day Came Pahlaud from Poronia bringging news that Allabardy and the Jentue that went with him have gotten Boola Cauns Dustick and are gone to range the Country and make enquiry as they were ordered in the meane time he has also brought at accot: of what he learned there with a fowle draught of the Country and Rivers and divers patternes of goods of those parts &ca.

The Pitans came into Malda againe.

25 The Pitan Merchants of this place haveing had a Delassa from the Nabob Came this day to Malda againe to trade as formerly.

27 Arrived letters from Hugly dated the 21st Currant.

At a Consultation

Present

Friday. 27th Mr. Fytche Nedham Cheif
Mr. Jonathan Prickman
Mr. Samuel Anthony.

Agreed for Seerbunds.

Selliman Picar and his Son being discoursed at length we Came to an agreement with them for 500 ps. seerbunds on a Washed Muster 40 co. long 1 co. broad at 1 r: 15 a: per ps. amots: to Rups. 968: 12 a: they are to be brought in ready for the Tuct within 3 mos: from this time.

The warehouse of chs: genl passed.

The Warehouse Accot: being brought in by Samll: Anthony was perused and passed as alose the Accot: of charges Genll: which was alsoe passed as follo: Vizt.

SAMLL: ANTHONY.	*Dr.*			PER CONTRA.	*Cr.*		
Aprill—	Rs.	As.	P.	Aprll:—	Rs.	As.	P.
1 To Rems: last mo:	139	13	0	30 Per charges Genll:	175	4	9
9 To Cash ..	300	0	0	Per charges Cattle..	25	4	9
16 To Cash ..	400	0	0	Per Servts: Wages	170	13	3
30 To Cash ..	400	0	0				
					371	6	9
				Per charges Dyett..	94	5	0
				Per charges Building.. ..	207	0	0
				Per house hold necessaries ..	120	11	0
					793	6	9
				Per Rems: Rs. A. P.			
				In Tattee .. 312 9 13½			
				In Cash .. 133 12 11½	446	6	3
	1239	13	0		1239	13	0

Fytche Nedham
Jonathan Prickman
Samll: Anthony

Sent letters to hugly. 29 Sent letters to the Worshipful Matts: Vincent &ca. accompanied with the Ballance of our last yeares bookes and Diary for mo: Aprill and an Accot: and Draught of Poronia with its adjacenties with divers patternes of goods of those parts &ca

Accot: Currant Hugly is as last mo·

Fytche Nedham
Jonathan Prickman
Samuel Anthony.

CASH.	*Dr.*			PER CONTRA.	*Cr.*		
May—	Rs.	As.	P.	May—	Rs.	As.	P.
1 To Ballance last mo.	3619	5	4	22 By Samll: Anthony	400	0	0
To Accot: Interest on 968 rs· 12 a: Dadine at 1¼ P. Ct... ..	12	1	9	27 By Weavers Seerbunds ..	968	12	0
					1368	12	0
				31 By Ballance ..	2262	11	1
	3631	7	1		3631	7	1

Fytche Nedham.

Malda Diary mo. June 1681.

At a Consultation

day Present

1 Mr. Fytche Nedham Cheif
Mr. Jonathan Prickman
Mr. Samuell Anthony

Sold quicksilver.

Sold 20 sr: Quicksilver at 4 r: 4 a: Per Seer and delivered a Maund formerly agreed for at do. price.

Accot: of Cash passed.

The Accot: of Cash for last mo. being perused was passed the Remaines being Rups: 2262: 11 a: 1 p.

Fytche Nedham
Jonathan Prickman
Samuel Anthony.

Sent letters to Poronia.

2 Sent letters to Allabardy and Hergolol at Poronia ordering them to be as speedv as possible in their business that they may give us an Accot: of those parts time enough to give out Dadine on Peter &ca. this yeare if thought Convenient and ordered by all meanes to bring with them Musters of what ever Commodities may be had there even to Corne and such like &ca. very full.

Arrived letters from Poronia.

6 Came letters from Allabardy and Hergolol signifying that they had ranged most of the Peter Country but have not leave to buy or sell any thing without Spindyar Cauns Perwanna almost all Poronia being his Jaggeer wherefore they are thinking to goe to the Nabob where he is at Wars to procure his Perwanna there &ca.

The governors beat our workmen for goeing to our new Factory.

10 Our Governors here are extreamely vexed at our building at Mucdumpore soe that for want of other Matter to shew their displeasure they Catch our poor Workemen as Candegurs Washers &ca. beating them and Makeing them give Notes not to serve us on the other side the Water notwithstanding which divers families are already gone hence thither who will be in a Manner immediately under us being there will for the Present be noe goods but ours cured there on whome they will be forced to depend for a livelyhood till other Merchants Come to live on that side the River.

13 These 4 last nights about one or two gurries after midnight we have had for 2: or 3: Gurries

Bricks thrown into our house at midnight.

together bricks thrown into our factory in Malda but Could not learne from whence they Came the people here say it is the Divell and that the house has formerly been haunted but we rather thinke it to be a Malda Malitious Rogue who if Can Catch shall be sure to have his payment for his paines.

Arrived letters from hugly.

14 About 10 a clock Came letters from Hugly with Invoice of 12 chests Silver qts 60 Ingots amounting to with charges Rups: 106496: 10 a: 9 p: advised to goe on 3 boats to Rajamaul whether some of us intend to morrow to goe and meet them.

At a Consultation

Present

Tuesday. 14

Mr. Fytche Nedham Cheit
Mr. Jonathan Prickman
Mr. Samuel Anthony.

Presented Rajaray.

Rajaray haveing been often with us and ready alwaies at Call to serve us on any Occation lately began to take it ill that his good will and paines has not been rewarded wherefore takeing him into our Consideration that he is yett to help us in many things and to encourage him tis agreed to send for him to our new factory and there present him with the following perticulers Vizt. 1 Shaul 1 Gurdle 2½ yds: Orda: red cloth for his pallankeen 1 Multiplying glass 1 pr. Scizzer and 5 bottles Rosewater.

Agreed with Simbonaut for white clo.

Simbonaut informing us of white cloth to be bought for ready money at Dawadpore and there abouts we Came to an agreement with him and delivered him 1200 rs: on 80 ps. Tangeebs none to be worth less then 7 rs: and 70 ps. Mullmulls none to be worth less then 5 rs: these are all to be brought into our new factory within a mo. from this time.

Agreed with weavers for Reyngs.

Wee alsoe Came to an agreement with Divers Weavers for Reyngs 300 ps. at 7 rs: Per ps. as on former termes though we have not at this time Cash enough to pay them their full money, we are promised to morrow or next day a Summe at Interest when shall deliver them their full Dadine in the meane time tis agreed to pay them somewhat in part to be bying thread for Warp and to keep them from takeing Dadine of other people they being most of them Weavers that have brought in their full Number of peeces of last Dadine.

The Cheif and second repair to dispose of the silver lately come up.

In order to the houseing and disposeing of the 12 chests of Silver now Comeing from Hugly to Rajamaul it is thought fit that the Cheif and Mr Prickman to morrow repaire hence to Rajamaul, whence the Cheif is to returne soe soone as Can dispose of any of the said Silver or at least seen the essayes of the whole parcell made and then leave Mr. Prickman (who can now best be Spared hence) to see to the Coinage or Sale of it who is required as soone as ever he has made any money by Sale or otherwaies to send it forthwith to us to pay off what shall be here standing at Interest and to forward our Dadine what possible.

The Remaines in Case &ca. deld : to Samll. Anthony.

The Remaines in Cash this time being Rups· 631 : 11a : 1p : is delivered to Samll. Anthony who is alsoe required to take up and give his noat for what money shall Come in as aforesaid in our absence and deliver those Weavers agreed with in this Consultation their full Dadine at our doore and as money shall hold out to be giveing out more Dadine on former termes for Reyngs Tangeebs and Mullmulls, he is likewise to goe dayly or every other day to our new factory to inspect into our Building &ca. there and to see that all our Workemen whome we imploy build their Conveniencies round our ground to live there though but for a time haveing lately had some reason for it (besides their being neare us) divers spies too, theives by night Coming that way being heard to utter some words as if they had a designe on our goods housed there which hope in few daies hence will be more secure in our brick building when finished.

To goe often to Mucdumpore.

He is alsoe to make and send in the hands of our Servants Dusticks to bring what of our goods are now ready at Orrua Shabashpore &ca. Orungs to our new factory and if any troubles in our absence should happen with our troublesome Malda Governors to send us word of it that may have our Advice therein and what letters Come from any parts he is to send us for our perusall·

To make and Send dusticks for our goods.

Fytche Nedham
Jonathan Prickman
Samuel Anthony.

Wareho: and Cha: Genl: Accot: passed.

The Warehousekeepers Accot: of the warehouse and Charges Genll: being perused were passed Vizt:

SAMLL: ANTHONY.	Dr.				PER CONTRA.	Cr.		
May—	Rs.	As.	P.			Rs.	As	P.
1 To Rems: last mo.	759	11	11	31	By Charges Genll:	105	8	0
22 To Cash	400	0	0		By Charges Cattle	29	3	5
					By Servants Wages	176	4	5
						310	15	10
					By Charges Dyett	72	12	0
					By Char: Building	312	2	12½
					By Remaines in tate ..	457	13	9½
	1159	11	11			1159	11	11

Fytche Nedham
Jonathan Prickman
Samll: Anothony.

Mr. Nedham and Mr. Prickman went to Rajamaull.

16 In the morning Mr. Nedham and Mr. Prickman sett out hence for Rajamaul.

Arrived at Rajamaul.

18 We arrived about 4 a clock this evening at Rajamaul by boat.

Visited Rajub Allee.

20 Understanding from our Vaquell here that our business has been some daies stopped and noe dustick to be gotten for our boats unless we pay Custome occationed by Meirza Rajub Allee writeing twice to Hodje Saffy Cawne about us and the Dutch which has reduced 2 orders from him one to take custome of our wood Comeing for our building and the other to demand Rewanne of the Dutch &ca. in which &ca. he includes us, wherefore this morning we went both to visit him and to dispute the business whereafter shewing coppy of the Kings Phirmaund &ca. papers requireing him to tare them in open durbar if they were of noe force and many such like pressing Arguments (he that wounded us knows the best healing unguent) he gave order to our Vaquel to Come to him in the evening and give a Mochelk on which our business should goe on till further order from Hodjee Zoffy Cawne the Stress of the Mochelke is that our Vaquel promise to write to the chief &ca. in Hugly about the premisses and when a phirwanna comes he will shew it them.

Sent letters to Poronia. 20 Wrote to poronia at large ordering them not to Meet the Nabob nor present him &ca. but to come thence forthwith bringing an Accot: of the place and Musters of all goods.

Arrived 3 boats silver from hugly. **Visited the fouzdar of Rajamaul.** 21 Arrived here 3 boats Silver from Hugly Consigned to us here qt: 12 chests Visited Sheeck Golom Mohuddee the fouzdar of Rajamaul who asked us many questions and received us very Civilly.

This evening we went alsoe to Meirza Zummaes who was very free in discourse with us promissing all kindness in his power to give.

Visited the Cozzee. 22 Went to visit the Cozzee and Meir Addull who is alsoe Cozzee of Malda.

Rajamaul Diary Mo. June 1681.

At a Consultation

Present

Thursday. 23d Mr. Fytche Nedham Cheif
Mr. Jonathan Prickman.

Haveing visited the Governors in whose power it was to stop our business and argued our case with them and opened or cleared the Stop on our Masters businesse againe we thought it a fitt time to give them their yearly present which alsoe Serves to gratifie their kindness now to us and not haveing promissed any thing till after our businesse was cleared we shall in our opinion have much more honour in presenting them freely as now it appeares then if had been Compelled to it as Sometimes we are in a Manner the perticulers concluded on to be given them are as follow Vizt:

To the Fouzdar Sheeck Golom Mohudde 2 yds. Scarlet 2 yds. fine green, 2 yds. orda: red broad cloth 2 Do. green 1 Trianguler glasse 20 botles Rosewater 1 large wax figure 1 Cristall Cup.

To Meirza Rajub Allee Kings Duan Bunxze Ameen and Wacka Nevice of Rajamaul, 2 yds. Scarlet 2 Do. fine green 2 do. orda: red 2 do. orda: green 1 Cristall cup and Cover 1 Trianguler glasse 20 botles Rosewater.

To Mirza Ruffea Zumma Droga of the dustick Maul 2 yds. Scarlet 2 yds. orda: red broadcloth 2 do. green 10 botles Rosewater.

To the Droga of the Tancksaul Dowlut Beag 3 yds. scarlet 10 bot: Rosewater.

To the Cozzee 1½ yds. scarlet 1½ yd. orda: red 1 pr Spectacles 1 pr: Scizzers 10 botles Rosewater.

To Meir Addull who is alsoe head Cozzee of Malda 1 yd. Scarlett 2 yds. orda: red, 1 paire Scizzers 1 pr. Spectacles 10 botles Rosewater.

To Cullmull Beag Meira Syud Jaffers Brother who offitates in his place of Shar Mulka Droga he being at Dacca 1 yd. Scarlett 1 yd. orda: red 10 botles Rosewater.

To Jaddoray the fouzdars Duan ¼ yd. Scarlett 2½ yd. orda: red 1 pr: Scizzers. To Mamhud Hossem, Munshy to Rajub Allee, ¼ yd: scarlet ¼ yd: orda: red 1 pr: Scizzers and 2 other of his writers ½ yd: orda: red and 2 pr: Scizzers.

To Ruffea Zummas Petesdust ¼ yd: scarlett ½ yd: orda: red and 1 pr: Scizzers.

To Syud Beag Meirbarka Droga ¼ yd: Scarlet ¾ yd: orda: red 1 knife.

To Sheck Sydula Pachoutryka Droga and Rajuballees Mosaib ¼ yd: Scarlet, ½ yd: orda: red, 1 knife.

To sevll: people at the Tancksaul ½ yd: scarlett and 3 knifes it belongs not to Some of those abovenamed to Meddle with or disturb our business yet against their orders they doe and for as much as they usually have been presented therefore it was thought fitt now least they imploy their witts against us which now they Cannot well doe:

Fy: Nedham
Jonathan Prickman.

Sent letters to Mr. Anthony to send us 50 md. Lead.

Sent letters to Mr. Anthony ordering him to send us 50 mds: lead for our Tancksaul use &ca.

Arrived from Malda 52 mds: 4 se: lead.

29 This day Arrived here from Malda 52 mds: 4 Se: Lead with advice thereof for our use in the Mint to Make our Chandyes and Essayes.

Sent a Generall to hugly.

30 A Genll: letter being drawn up read and approved was sent forward to his worship &ca. in Hugly:

ACCOT: CURRANT HUGLY. *Dr.*	Rs.	As	P	PER CONTRA. *Cr.*	Rs.	As.	P.
June—							
30 To Ballance ..	244447	15	7	By Ballance last Mo. ..	137951	4	10
				By Ingots Silver	106261	5	3
				By cha: Merchand: on do: hither ..	235	5	6
					244447	15	7

Fytche Nedham
Jonathan Prickman.

	CASH. *Dr.*	Rs.	As.	P.		PER CONTRA. *Cr.*	Rs.	As.	P.
June—									
1	To Ballance last mo:	2262	11	1	1	By Rajamaul residence paid the house keeper 6 mos: wages to the end May ..	9	0	0
	To Quicksilver 1 md: 20 sr: @ 4r: 4a: per Seer ..	255	0	0	14	By Samuel Anthony	400	0	0
16	To Peranaut at Interest at 1r: 2a: Per Cent Per Mo. ..	3000	0	0		By Pahlaud for wood expe· ..	142	0	0
	To Accot: Interest on 3300 rs: dadinee at 1¼ Per Cent	41	4	0		By Simbodasse ..	1200	0	0
						By Accot: plate for a horse furniture of silver qt: ps: of 8... rs: 123 5½ a: Makeing do: 10 0	133	5	6
					P·	By rarities for presents Vizt: 1 fine shaul 15 0 6 knifes in a Case .. 4 8 1 putka silke & silver .. 4 0 1 large wax figure .. 12 0	35	8	0
						By Jona: Prickman for expences at Rajamaul ..	150	0	0
					16	By Weavers Reyngs	2100	0	0
					24	By Samuel Anthony	400	0	6
							4569	15	0
						By Ballance ..	989	0	1
		4558	15	1			4558	15	1

Fy: Nedham

Rajamaul Diary Mo. July 1681.

4 Came news from Malda that by reason of the Jidgea which now is very hott there and heavy on the poore people which makes our Taggadgers Complaine that many Weavors run away but question not but when the heat is over they will come againe.

At a Consultation

Present

Wednesday 6 Mr Fytche Nedham Cheif
Mr. Jonathan Prickman

Haveing for many daies busied our Selfes to find out the tricks of the Tancksaul or Mint and to see Essayes of our Silver made as well at our house as at the Mint which being done (tho not to our satisfaction) they not agreeing with our English Essayes according to the proportion of difference advised by his Worship[11]: &ca. from Hugly, yet seeing we have tryed all manner of wayes Could Invent to find out if possible some profitable reason of the difference in vaine for that the Chandyes Gennerally agreed, most of the essayes comeing out alike proportionable their finess even to a Ruttee in 93 rs: wt: and because the time of the yeare for giveing out Dadinee for this Shipping begins to Spend a pace and for that Mr. Nedhams presence is required in Malda therefore it is resolved and ordered by this Councell (as most proffitable to our Honble. Masters) that Mr. Nedham repaires to his charge there and that Mr. Prickman haveing seen the way of coyning goe on with that business as fast as possible that our giveing out dadinee be not hindred as it must needs be if Should Stay for answer to the premisses from hugly which wee are Confident will neither way be any proffit to our Honble. Masters haveing left noe Stone unturned to find out the right Essayes of the silver: wherefore we are of opinion that there might be a mistake in the proportion of difference advised us from Hugly betwixt our English Standard and the Standard of Rupees:

Agreed that Mr. Nedham repaires to Malda.

Fytche Nedham
Jonathan Prickman

Mr. Nedham arrived from Rajamaul.

7 Betimes in the morning Mr. Nedham Sett out from Rajamaul very Sick for Malda where he arrived the Same day about 2 a clock in the afternoone.

Came letters from Rajamaul.

Came new[s] from Rajamaul that 34 Peter boats were arrived there from Pattana and that Rajub Allee denies to give them his pass pretending that Boolchund has a late order from the Nabob to take Custome of us but that we suppose to be onely wind and will blow over presently.

Came letters from hugly.

Came letters from Hugly with Coppy of Hodgee Zoffy Cawns new phirwanna dated October 2d: 1680.

17 Rajaray haveing severall daies endeavoured to borrow of us about rups: 2000 for 2: mos: to make up his Mungemull and finding wee Could not be wrought upon by faire words to day he Sett himself to Molest our affaires what he could sending people to plow up the high way newly made about our factory ground and to Make againe the way upon the Aul by the river in our ground as formerly but he missed of his Aime some of his people that attempted it haveing received their due reward from our Peons and Dandyes ran away which ended that dispute.

Malda and Englezavad Diary Mo. July 1681.

20 Came news from Rajamaul that the Peter boats were released there.

Arrived from Rajamaul mint 15000 rs:

24 Came from Rajamaul mint 15000 rs: with advice thereof from Mr. Prickman.

At a Consultation

Present

Munday 25th Mr. Fytche Nedham Cheif
Mr. Samuel Anthony

Accot: Cash passed. Warehouse Accot: and Charges Generall Accots: passed.

The Accot: of Cash for last Mo: being perused was passed the remaines being rups: 989 1 a: 7 p: Samuel Anthony haveing brought in his warehouse Accot: and accot: of charges Generall which being perused was passed as follows:

	SAML: ANTHONY. *Dr.*					PER CONTRA. *Cr*			
June—		Rs.	As.	G.			Rs.	As.	G.
1	To Rems: last Mo:	457	13	8½	30	By Charges Genll:	137	14	10
14	To Cash	400	0	0		By Charges Cattle	27	8	0
24	To Cash	400	0	0		By Servants Wages	188	2	15
							353	9	5
						By Charges Dyett	70	3	10
						By Charges Building	283	2	15
							706	15	10
						Per Rems: in tattee .. 454 10 8½			
						In Cash .. 96 3 10	550	13	18½
		1257	13	8½			1257	13	8½

Agreed to buy 8 begaes ground more of Rajaray.

Our troubles at Malda with the Crowry &ca. growing to a great height about our not Suffering our goods to be Chauped and goeing to Muckdumpore to live to looke after our business there, whether most of our goods now are brought, (and alsoe to see after our builders) therefore it is thought very necessary and agreed on to buy 8 begaes ground more of Rajaray lying neare our factory gate Northward on one side the way which will afford us earth for our building and alsoe a tanck in time without charge, to wash the Honble. Companies goods in, on which ground we intend God willing this yeare to Cundy Nurd and Cure the Honble Companies goods, it being a place every waies convenient for that purpose and neare the River also the curing the goods in our own ground will cleare us of many troubles Vizt. of the Malda Governors Clamouring that we breake and spoyle their Orung by makeing one here which now cannot be pretended whilst we suffer noe goods to be cured in our Corconna but our own Seeing that if they were to be cured in Malda they ought of right to have noe proffit by it alsoe it will hinder now and hereafter any Governours from begarring our workemen nor hindring our worke they being within our ground, therefore this day Rajaray Choudry was sent for who being Come with the Cozzee and Congoes Gomastahes of his purgona the ground was meazured with the same line with our factory ground Eigh[t] begaes and the marks of its bounds noted and the price agreed for it was 40 rs: according to which he forthwith gave us a note which was Signed and witnessed accordingly.

Agreed with Rajaray for brick and Stone.

Rajaray haveing the Command of most of the brick and Stone in these parts and Gower &ca. and the waters being now high and fitt time to bring them cheap, wherefore have already sent our own people to bring bricks and understand the charge and alsoe discoursed with Rajaray about the same and finding he was willing to take that business upon him and that he would help us with brick much cheaper than we can bring them our Selfes, considering the great Number of fisher boats in his jurisdiction which are all at his beck and that there is Conveyance by water to us thence but just in the time of the highest water soe that if Slip this oppertunity our building must lye still in the dry time or must pay dearer for our bricks and may be not gett what we want neither, therefore after good consideration how to deale with him we now have agreed with him for 105 lack bricks at 3500 Per Rupee each weighing 2 sr: 14 ch: hugly weight which in all amounts to Rupees 3000 of which tis agreed to pay him downe 2000 rs: now and the rest 10: or 15 daies hence as see bricks come in they are to be delivered us at the river Side on our ground.

Agreed for Cossaes.

Persaud Moodee haveing brought in his former dadinee we Came to an agreement with him for 700 ps: Cossaes of Orrua on Simbodass his last Muster on which is ordered to pay him 7000: Rupees and dispatch him thither before the Dutch Picars who are now on goeing with a good Summe. Here in these parts is noe allowance of Batta on Sicca Rupees as have often proved yett in Complyance with the Worshipfull Agent &ca. orders we shall force the Picars and weavors to Allow 1 Per Cent tho we are certaine will be perfect loss to them unless they are considered for it in prizing their goods and for what is paid out otherwaies then on dadinee Can gett noe Batta for, therefore are forced to pay it as peet that our businesse may goe on:

Fytche Nedham
Samll: Anthony

Ibrain beag came from poronia.

25 Ibraim beag that went with Allabardy to Poronia is returned Sick and reports to us that Allabardy and Hergolol were ready to Come thence and might expect them in 5 or 6 daies.

The Pitan merchants visited us at our new factory.

All the Malda Pitan Merchants Came to visit us at our new factory, where we feasted them with what the time and place afforded and Contracted friendship with them after the Manner of the Country which is not wont to hold long.

The fouzdar of Malda went to Dacca.

29 Ramabeag fouzdar of Malda being Some daies Since Taggeerd went this day from Malda towards Dacca.

30 Came order to Jeamshirebeag to have the Chaup Nurd and Cundimaul and Gautkaguzzer of Malda from Monerams people from this day forward.

The Delols have given notes not to come neare our Factory.

31 We are at it tooth and Naile with Jeamshirebeag Malda Crowry and have been a long time about the Chaup and our new factory but hope now shall come to arbitration both Sides desireing it, yett neither bows as yett, if we can carry it now Suppose shall have noe more quarrells with Malda, but the Crowry and Hernarraine Ray is very stiff and desirous to keep us under Malda, they dayly scare us with the news of the Nabobs phirwanna Comeing to order us to buy noe goods but in Malda and there not without the chaup, all Delols have given notes and are forbid on Perill of Confiscation of their goods &ca. to Come neare us, wherefore perhaps shall now try and prize our goods our Selfes, soe that if can but Satisfy our weavors and picars this bout without the Delols hence forward a Delol Shall not Come within our Doores, twill be a good oppertunity to Shake them off.

Accot: Currant Hugly is as last Mo:

Fytche Nedham
Samll: Anthony

	Cash.	Dr. Rs.	As.	P.		Per Contra.	Cr. Rs.	As.	P.
July— 1	To Ballance last mo: ..	989	1	7	6	By Saml: Anthony	400	0	0
18	To Ramnaut at Interest at 1 r: 2 a: Per Cent Per Mo: ..	500	0	0	15	By Pahlaud for timbers for our factory ..	411	6	0
25	To Sicca Rups: recd: from the Mint ..	15000	0	0	18	By Saml: Anthony	400	0	0
25	To Accot: Interest on 7000 rs: Dadinee at 1¼ Per Cent ..	87	8	0	25	By Rajaray Chowdry on bricks and 8 begaes land ..	2040	0	0
	To Accot: Batta on 9000 rs: at 1 Per Cent ..	90	0	0		By Persaud Moodee	7000	0	0
					30	By Saml: Anthony	677	11	7
							10929	1	7
						By Ballance ..	5737	8	0
		16666	9	7			16666	9	7

Fytche Nedham.

Englezavad Diary Mo. August 1681.

Came letters from Hugly.

2d Came letters from Hugly adviseing of 2 Ships the George and Anns Arrivall in Ballasore Road &ca.

At a Consultation

Present

Friday 5th Mr. Fytche Needham Cheif
Mr. Samuel Anthony

The Accot: of Cash passed.

The Remaines of the Accot: of Cash to the end of last month being found to be 64 rs: 4¼ a: was passed.

Sent letters to hugly.

A Generall letter being drawne up read and approved was sent forward to his worship &ca. Councell in Hugly: Fytche Nedham
Samll: Anthony

Jeamshirebeag promisses to come to our new Factory.

5th Jeamshirebeag promissed our Vaquel to come to our new Factory on Munday next to see the Chief and Accommodate the quarrells betwixt him and us.

At a Consultation

Present

Satterday the 6th Mr. Fytche Needham Chief
Mr. Samuel Anthony

Haveing many daies before this time Called and discoursed with our weavors and Merchants

Agreed with our Merchants and weavors for goods.

about takeing our new dadinee (tho we could have wished the other had been first prized which could not be for our troubles with the Government) which they now agreed to take on our former musters tho not without much Jangling and disputes Silke and thread is now dearer then it was then which we promissed to consider them for the limited time for bringing there goods in and prizeing them is the end of October next the perticulers and quantities are as followeth Vizt:

To Sookdeave Tundun			
Tanjeebs ..	150 ps: at 12 rs: is	1800	
Mullmulls ..	150 ps: at 10 ,, ,,	1500	
Orrua Cossas	200 ps: at 10 ,, ,,	2000	
To Muttuck and Trepore Saw		——	5300
Tanjeebs ..	150 ps: at 12 rs: is	1800	
Mullmulls ..	250 ps: at 10 ,, is	2550	
		——	4300
To Divers weavors on the Severall sorts goods as follows			
Elatchaes ..	131 ps: at 9 rs: Per ps: 30 co: lo. and 2 brd: ..		1179
Seersuckers	100 ps: at 8 rs: Per ps: do: lo: and brd: ..		800
Chandenyes	320 ps: at 6: do: lo: and brd:		1920
Orungshies	75 ps: at 5: do: lo: and brd:		375
Charconnaes	100 ps: at 4½ do: lo: and brd:		450
Do. ..	370 ps: at 3½ do: lo: and brd:		1295
Nehallewares	180 ps: at 4½ Per ps: 36 co: lo: and 2 brd: is ..		810
Mundeebs ..	398 ps: at 10½ do: lo: and brd:		4179
Tanjeebs ..	29 ps: at 15 Per ps: 40 co: lo: and 2 brd: ..		435
Do. ..	1141 ps: at 12 do: lo: and brd:		13692
Mullmulls ..	2100 ps: at 10 do: lo: and brd:		21000
Reyings ..	260 ps: at 7 do: lo: and brd:		1820
Which amounts to in all rs: ..			57555

Fytche Nedham
Samll: Anthony.

Visited Sheck Futtula.

8 Last night we being invited to feast at Nabob Muck rubcaunes house and Sheck Futtulaes house this morning we went being over against Malda where we mett the Pitan Merchants &ca. people of note hereabouts, and a new Fouzdar goeing to Gooragaut who promissed us his favour if at any time should have occation in those parts. we were Set above all at the feast and rated very curteously.

About 10 a clock this morning Came a new Fouzdar to Malda (which hindred Jeamshire beags comeing to the feast and alsoe to meet us as promissed) Sent by Boolchund Hernarraine haveing putt all his Governments on both Sides the water into his Command himselfe not being able to deale with us and the Pitans. that by meanes of Boolchunds Strick Governing he may worke his ends on us, to make our weavors pay the Chop &ca. as the Pitans pray but we have not Suffered our weavors yet to pay any nor hope shall not have occation.

Jeamshire-beag hales our picars to prison beating them &ca.

Last night Jeamshire Beag hearing that the Malda picars came to us to take our Puttun notwithstanding their obligation passed to him to the Contrary. sent and haled many of them to prison beating and forceing from them &ca which if not remided from Dacca our business will be hindred on that Side the water he hath alsoe sett divers Punsewys on the river betwixt Malda and our new Factory and alsoe below it to hinder any goods comeing to us yet notwithstanding we have brought goods of our Malda goods hither on our Budgera to be prized and Cured here with the rest and hope to get the remaining part hither by the same Conveyance whither he will or noe.

This evening arrived a boat from Rajamaul with Rups: 13900.

This evening late Came a boate with 13900 Rups · and advice from Mr. Prickman at Rajamaul that the Silver is neare all in the Tancksaull and that our business has been long detarded by reason of Roggee the Saymasters Sickness not being able to come to the Tancksaul and that now he is somewhat recovered and Comes againe to worke and hopes Shall have all Coyned in 10 dayes more now alsoe came Answers to our letters wrote to Rajub Allee and the Droga of the Tancksaul who both promise fare, the first. that he will write to Dacca as desired about our affaires for which he expects a reward and the other that he will keep the Custome of the Mint Amonut till has order from Hodjee Soffy Cawne about [it], there is alsoe a New Wackanavice Come to Rajamaul Called Mamood Lumma.

Sent letters to Mr. Prickman at Rajamaul.

9 Sent letters to Mr. Prickman at Rajamaull in answer to his to us of the 7th Currant.

Allabardy and Hergolol came from poronia.

11 Sent to Rajamaul adviseing that have news from Pattana that a new Phirmaund is come to cleare the Custome of the Tancksaul &ca.

11 Allabardy with Hergolol arrived from Poronia.

Came letters from Mr. Prickman with 9100 Rups: sicca.

12 Came letters from Mr. Prickman with Rupees 9100: from the Mint.

Sent letters to Rajamaul with 19 Mds: 20 Sr: Lead.

13 Sent Letters to Rajamaul with 19 mds: 20 Sr: more of lead to Mr. Prickman haveing advice that he has agreed with a Merchant for 40 mds.

Jeamshire-beag promisses to Come to our new factory to put an end to the quarrells made betwixt us.

. Our Vaquel brought us word againe that by meanes of Meiza Syud Beage and other friends Jeamshire Beag has againe promissed to Come to our new Factory to put Some end to the quarrells now betwixt us to morrow which being Sunday our Vaquell was ordered to put the meeting of till the Munday.

At a Consultation

Present

Munday 15

Mr. Fytche Nedham Cheife
Mr. Samuel Anthony

Agreed with picars and weavors for goods.

Haveing discoursed with more Picars and weavors wee Came to an agreement with them for the following goods on Same termes with those of the 6th Currant Perticuler Sorts and quantities are as followeth:

To divers weavors Vizt.		
Charconnaes	20 ps: 30 covds: lo: and 2 brd: at 4½ rs: Per ps:	90
Do.	300 ps: do: lo· and brd· at 3½ Per ps:	1050
Nehallewars	40 ps: 36 covd: lo: and 2 brd: at 4½ Per ps:	180
Mundeells	102 ps: Do: lo: and broad at 10½ Per ps:	1071
Tanjeebs	10 ps: 40 covds: lo. and 2 brd: at 15 rs: Per ps:	150
Do.	140 ps: do: lo: and brd: at 12	1788
Mulmulls	100 ps: do: lo: and brd: at 10	1000
To Sookdeave Tundun Vizt		
Mulmulls	200 ps· 40 co: lo: and 2 brd: at 10	2000
To Persaud Moode Vizt.		
Orrua Cossaes	200 ps: 40 co: lo: and 2 brd: at 10	7000
		14329

Fytche Nedham
Samll: Anthony.

August.

Agreement of peace made betwixt Jeamshire-beag and us at our new factory at Englezavad.

15th This morning Came Jeamshire Beag from Malda to our new Factory at Englezavad by Muckdumpore with Meza Syud beag and Dawad Cawne the chief of the Pitan Merchants where we civilly received them feasting them according to their and our manner with which they were very well pleased and became very earnest with us and Jeamshire Beag to be friends, they promissing for him and he himself alsoe that our business should not be troubled farther but Contrarily in what lay in his power he was and should hence forward be ready to help us, it is now alsoe agreed betwixt us that he shall not Meddle with, nor chop our Puttun goods nor force any thing from our weavors and picars in the name of chop money on our goods, but what Can gett of them on other pretences by fair meanes in time to cleare our picars &ca. from paying any Chop money on our goods without farther trouble from Dacca, tho an order on him to that purpose would not be amisse for he haveing heard that we have wrote to Dacca against him tis very like it partly Scared him into an agreement with us Least afterwards should be forced to it with shame and truly twas not with much honour to him now for all the country laugh to see him Stoop soe that has alwayes been soe high and Stiff.

Mr. Jonathan Prickman came from Rajamaul.

Mr Jonathan Prickman came from Rajamaul haveing as he saith gotten all our silver into the Tancksaul and is coyning which made him soe bould to Come over hither that he might be Marryed according to Contract to Mrs. Mary Cole before Mrs. Nedham went down to Hugly which is intended in few dayes.

Mr. Jonathan Prickman and Mrs. Mary Cole was Marryed.

18 Being Thursday about 11 a Clock was Consumated the Marrage betwixt Mr. Jonathan Prickman and Mrs. Mary Cole the rights being performed by Samuel Anthony according to the use of the Church of England all the Dutch and English of this place being present

Mr Jonathan Prickman with his wife went to Rajamaul.

21 Mr. Jonathan Prickman returned with his wife to his businesse at Rajamaul.

22 Our Vaquel went to Jeamshirebeag to know why he continues still to hinder our businesse and vex our people contrary to our late agreement whose answers are full of tricks and quibles whereby understand shall have noe setled peace but by meanes from Dacca.

The Cheif &ca went to Malda

23 The Cheif &ca went to Malda Intending to pay Jeamshire Beag vizt: and try if can find what he aims at but he would not be spoken with then, wherefore we lett our vaquel and returned to our business at our new factory.

This evening Mrs. Nedham with Mrs. Story went hence for hugly.

At a Consultation

Present

Wednesday 24th

Mr. Fytche Nedham Cheif
Mr. Samuel Anthony

Sent letters to hugly.

A Generall letter to the Worshipfull Matthias Vincent &ca. Councell being drawne at large displaying our great troubles againe with our Malda Governours, was approved and ordered to be sent forward with speed.

Wareho: Accot: and cha: Generall Accot: passed.

Samuel Anthony brought in his Warehouse accots: and the Accot: of charges Generall and building for last month which is passed as followeth:

	SAML: ANTHONY.	*Dr.*			PER CONTRA.	*Cr.*		
July—		Rs.	As.	G.		Rs.	As.	G
1	To Remaines last Mo: ..	550	13	18½	By Charges Generall	180	12	10
6	To Cash	400	0	0	By Charges Cattle	26	13	15
18	To Do.	400	0	0	By Servants Wages	202	8	05
30	To Do.	277	11	12		410	2	10
31	To Do.	400	0	0	By Charges Dyett	92	6	15
					By Accot: building	630	0	0
					Rems: in tatte ..855 13 8 In Cash 40 2 17½	896	0	5½
		2028	9	10½		2028	9	10½

Fytche Nedham
Samll: Anthony

Sent Allabardy with Hergolol hence to hugly.

26 Sent Allabardy and Hergolol hence to Hugly to give their relation of Poronia with their Accot.

Came letters from Rajamaul with 8700 rs: Rups: Siccaes.

Came a letter from Rajamaul with 8700 rs. by boat accompanied by 4 peons

Sent letters to Hugly.

28 Sent Generall advices to Hugly adviseing that here is news of a Phirwanna on us sent to Boolchund a copy of which is come to the Fouzdar of Malda and that he will not shew it us &ca, at larg.

Sent letters to Rajamaul.

29 Sent letters to Mr. Prickman at Rajamaul desireing him to make what hast possible to finish the Mint business, and sent him 3 yards broadcloth &ca.

Came letters from Hugly.

30 Came letters from his worship &ca. in Hugly with Invoyce of Silver to Rajamaul amount to Rups: 131196 13a: &ca.

Came a dustick from Boolchund.

31 Came a dustick from Boolchund directed to us ordering us to leave this our new factory and goe live at Malda and buy and sell there and noe where else &ca. procured by lyes wrote of us by Jeamshire Beag to him and Hernarraine at Dacca.

Stormy weather.

These last 10 or 12 dayes has been sad rainy weather and the 4 last of them soe windy with all night and day that many brick houses in Malda are fallen therewith doeing much hurt and very many earthen walls and houses are laid flatt yet notwithstanding its fury thanke God our new building gott little damage thereby yett at Malda all our hired places leake and about 20 covds: of wall fallen downe and much more likely to fall the walls being uneven and wett through.

31 Sent letters to Mr. Prickman and returned him Coppy of his Worships letter to us with Invoyce of Silver now Sent from thence to Rajamaul we visited our new Fouzdar of Malda who gave us very Sweet words to pump our Intentions to find out if twas possible to make us leave our new factory and come to Malda or noe and offering to be A mean to end our quarrells with Jeamshirebeag for which we thanked him tho wee know tis not in his power he being in a manner under him his businesse being only to helpe Jeamshire Beag where his owne power will not doe.

Accott: Currant Hugly is as last Mo:

Fytche Nedham
Samll: Anthony

	CASH.	*Dr.*			PER CONTRA.	*Cr.*	
Augst. 1681—		Rs.	As.	Augst —		Rs.	As.
1	To Ballance last Mo:	5737	8	2	By Hinguttdas & Chandr: Cawne Errendyes &ca.	4382	13
10	To Sicca Rups: from Rajamaul ..	13900	0	4	By Simbonaut on Tanjeebs & Mulmulls	5000	0
11	To Do	9100	0	6	By Sookdeave Tundun	7300	0
20	To Do.	18000	0	15	By Trepore Saw ..	4300	0
21	To Siccaes from Rajamaul	2200	0		By Persaud Moodee	7000	0
	To Jona: Prickman Acco: Lead & siccaes Sould: at what rates not yet known ..	2800	0	16	By Rajaray Chowdry on bricks ..	1000	0
27	To Siccaes from Rajamaul	8700	0	17	By Saml. Anthony	400	0
	To Acco: Interest on 62766 rs: 13a: dadinee at 1¼ Per Cent	784	9	26	By Do.	4600	0
	To Accot: batta on 60900 rs: dadine at 1 Per Cent ..	609	0	30	By Weavors Elatchaes	1179	0
					By do. Tanjeebs ..	8065	0
					By do. Mullmulls ..	11500	0
					By do. Seersuckers..	800	0
					By do. Chandenyes..	1920	0
					By do. Orungshies ..	375	0
					By do. Charconnaes	2885	0
					By do. Nehallewars	990	0
					By do. Mundeels ..	5250	0
					By do. Reyngs ..	1820	0
						64766	13
					By Ballance ..	64	4¼
		64831	1¼			64831	1¼

FY: NEDHAM

Englezavad Diary Mo: September 1681.

At a Consultation

Present

Satterday 3d

Mr. Fytche Nedham Chief
Mr. Samuel Anthony

Accot: Cash passed.

Agreed to send our vaquell to Boolchund.

The Accot: of Cash being perused was passed the Remaines at the end of last month being Rups: 64: 4¼ a: Ray Boolchund by a late Phirwanna from him Stopped all our business here it was thought fitt and agreed to send Sookdeave our Vaquel to Boolchund to Negotiate there for us to See if Possible by any meanes he may gett the said Phirwanna reversed or soe that our business may goe on here in spite of the Malda Governours in order to which it is agreed to Send with Sookdeave a letter to Boolchund relateing to our quarrells with the Malda Governours &ca. drawn up in Persia[n] at large.

Sent a letter with our vaquell to Boolchund.

Rajaray Chowdry proffering us Pillers and other sorts of stone for our building wherefore we have made now an agreement with him for a parcell to be brought this raine time to our gaut or landing place at our Factory and order Rupees 500 to be delivered him thereon:

Agreed with Rajaray Chowdry for Stone.

Fytche Nedham
Samuel Anthony

Sookdeave this evening went hence to Cassumbazar on the business above mentioned with whom we sent alsoe a letter to Mr. Charnock &ca. desireing them to assist our Vaquel in what they can.

Sookdeave went hence to Cassambr.

This afternoon a Dear being hunted on Hernarraines side in Shapore took the River over against our new Factory where we coursed and killed it which much offended our opposites makeing a great Stirr in vaine to have a Share of it.

Killed a Dear.

4 Came a letter from James Price Vaquel at Dacca Informing us Hernarraine by his lying Storys has procured a Phirwanna to Boolchund on us to raise our new Factory and live at Malda againe pretending that by our comeing hither he shall loose 24000 Rups: yeerly which can noe wayes be proved &ca.

Came a letter from James Price our Vaquell at Dacca.

7 Wrote the whole Story of our troubles to James Price our Dacca Vaquel and advised Mr. Hervy &ca. of it that may understand all from him we not haveing assistance enough to write it in English.

Wrote to James Price our Dacca Vaquell.

8 This morning came an other dustick or Pherwanna from Boolchund grounded on a Pherwanna from the Nabob with a Chupdar ordering us to leave our new Factory forthwith and goe live at Malda and buy and sell there paying the Chop &ca. threatning us and our new building with many great words.

Came a dustick from Boolchund.

Presented Sybram Ray Malda fouzdar ¼ yd. scarlett for his sword.

Presented the Fouzdar of Malda with ¼ yd: Scarlett.

This evening the Chief and third went hence

The Chief &ca. went to Malda.

to Malda to dispute our case with Jeamshire Beag the Fouzdar &ca.

Stormy weather.

9 Much wind and Raine.

10 Do

11 Noe Stirring out for bad weather.

The fouzdar &ca. came to our house in Malda

12 The Fouzdar and Jeamshire Beag with Boo[l]-chunds Chupdar and many others Came to our house in Malda where we had much dispute with them to little purpose for noe agreement was made save that in order to Complyance with the Nabobs and Boolchunds Phirwannaes we promissed that we would not act any thing of Merchandize till should have farther orders which vexed them to the heart yett they could not Say wee Slighted those high orders tho we did not directly obey them.

Arrived letters from Rajamaul with 10000 rs: Siccaes

This evening came letters from Rajamaul with 10000 rs: from Mr. Prickman who advizes that our other business there is wholly Stopped Rajub Allee and Ruffea Zumma denying to give any more dusticks for boats the former swareing that if we Shew not Hodjee Zoffy Cawnes Phirwanna to clear us quickly he will take Custome of us &ca.

13 Went to Malda to repay Jeamshire beags vizit to us and to try him farther if a good agreement by any meanes might be made with him that our goods might be prized and cured here at our new Factory where they are and our Cor-connae ready for that purpose; there not being at Malda a quarter roome enough besides that which is standing after the Storme is most thack and open very dangerous for fires &ca. and alsoe the damage our goods will Sustaine by tumbling up and downe and carrying from one place to another, but noe good could be done he being rather more exasperated then Inclined towards peace expecting now in few dayes to be Tag-geered endeavours to get what he Can by faire or fowle meanes the whole Country Crying out of him especially our weavors picars whom he useth Cruelly beating and Imprisonning all Can Catch and forceth money from them which hindreth their and our business much

Sent letters to hugly.

14 Sent letters to his worship &ca. in Hugly one dated the 8th the other the 14th Currant both pictureing out our troubles at Large with divers other coppyes of Letters and papers to the Same purpose sent to divers places.

At a Consultation

Present

Thursday the 15th

Mr. Fytche Nedham Cheif
Mr. Samuel Anthony

Sent a letter to Boolchund.

A Letter to Boolchund about our troubles being drawne up was approved and ordered to be Sent forward with copy of Do. to our Vaquel there with a letter alsoe of Instructions to him.

Wareho: Accots: & charges Genll: Accots: passed.

Mr. Samuel Anthony haveing brought in his Accots: of the warehouse which on perusall was passed as alsoe the Accot: of charges Generall and building which is as followeth:

Augst.—	Samll: Anthony. *Dr.*	Rs.	As.	G.		Per Contra. *Cr.*	Rs.	A.	G.
1	To Remaines last mo... ..	896	0	5½	31	By Charges Generall	208	11	10
17	To Cash . ..	400	0	0		By Charges Cattle	24	11	10
26	To Do.	600	0	0		By Servants Wages	188	10	10
31	To Do.	100	0	0			422	1	10
						By Accot: building	508	3	0
						By Charges Dyett	66	13	0
						By packing stuff 4½ mds: Cotten 11 rs: Per md:	49	8	0
							1046	8	10
						By Remaines vizt: In Cha: Merchand .. 566 4 0 In Accot: building .. 297 9 8 In Charges Genll: 58 0 0 In Cash .. 27 9 7½	949	6	15½
		1996	0	5½			1996	0	5½

Fy: Nedham
Samuel Anthony

Came letters from Rajamaul.

16 Came advice from Rajamaul with Coppy of a Phirwanna from Hodjee Soffy cawne to Dowlut beag ordering him to take 4 rs: Per Cent Custome of us and the Dutch in the Tancksaul.

Sent letters of advice to Jeames: Price Vaquel at Dacca about our troubles here with Jeamshire Beag and alsoe those at Rajamaul.

Arrived letters from Rajamaul with 11500 rs:

16 Came this evening from Rajamaul 11500 rs: with advice thereof and how that all Merchants that deale with us or the dutch has put a Stop to their businesse in the Tancksaul to See if Can find any remedy to cleare the Custome or at least to take off the ½ rupeo that is now put on us and the Dutch more then before.

Came letters from James Price at Dacca.

17 Came news from James Price at Dacca that nothing was to be done with the Nabob nor Hemarraine without money &ca.

Presented Lol Cawn with ¼ yd: scar

Presented Lol Cawne Boolchunds asswar that came on us with ¼ yd. scarlett.

Presented Allumchund Sekedar with ¼ yd: broadcloth.

29 Presented Allumchund Sekedar of Gopaulpore Purgona with ¼ yard ordinary red broadcloth to finish his Saddle.

Accot: Currant Hugly is as last month.

Fytche Nedham
Samll. Anthony

	CASH.	*Dr.* Rs.	As.
Sepr.—			
1	To Ballance last mo:	64	4¼
14	To sicca rups: from Rajamaul ..	10000	0
17	To Do.	11500	0
30	To accot: Interest on 18500 rs: dadinee at 1¼ Per Cent ..	231	4
	To accot: Batta on Siccaes 15500 dadinee at 1 Per Ct.	155	0
		21950	8¼

	PER CONTRA.			*Cr.* Rs.	As.
3	By Charges Genll: presented the Dutch Doctor for many vizits & phisick administred to Sevll: 4 gold Mohurs at 12 rs: ¼ each ..			49	0
4	By Rajaray Chowdry on stones for our building ..			500	0
14	By Saml: Anthony for expence ..			500	0
16	By weavors Tanjeebs			8000	0
17	By Do. Mullmulls ..			10500	0
26	By Saml: Anthony for expence ..			600	0
29	By accot: Salary to this day pd: to divers vizt:				
	Fytche Nedham the ½ years salary from the 25th March past to this day at 40 Per an:	88	14¼		
	Jona· Prickman do. at 20 ..	44	7		
	Saml: Anthony do at 20 ..	44	7		
				177	12¼
	By Samll: Anthony for genll: expence ..			400	0
				20726	12¼
	By Ballence ..			1223	12
				21950	8¼

Fytche Nedham

Englezavad Diary Mo: October 1681.

Came letters from Dacca.

1 Came letters from Dacca with coppy of Hodjee Soffy cawnes Phirwanna on Boolchund which signifies little or nothing to our businesse here.

Went to Malda to meett Jeamshirebeag &ca.

Went to Malda to meet Jeamshirebeag &ca. and end our troubles with them but was dissopoynted and put off till Munday next.

3 Went againe to Malda in vaine.

Sent letters to Rojamaul.

Sent letters to Mr. Prickman at Rajamaul in answer to his of the 29 past.

4 Att Malda the papers of agreement with Jeamshirebeag and us being ready and all perticulers on both sides agreed to some Devill or other we suppose the dutch vaquel or Mendybeag (who both were with Jeamshirebeag then when he was ready to come to our house to Signe and finish our agreement) has Instilled other thoughts into him soe that he came not but Sent us word he could not Stand to those termes nor concent that wee cure our goods any where but in Malda &ca.

The Dutch Vaquell spoyles our late agreement.

We have now certaine intelligence that twas the Dutch vaquell that spoyled our late agreement and that he gave Jeamshirebeag Somewhat not to be friends with us.

At a Consultation

Present

Mr. Fytche Nedham Cheif
Mr. Samuel Anthony

Accot: Cash passed.

The accot: of Cash after perusall was passed the remaines being found to be Rs:

Charges Genll: Accots: passed

Mr. Anthony brought in his accots: of charges genll: which was passed as followeth ·

Sept.—	SAMLL. ANTHONY.	*Dr.*	PER CONTRA.		*Cr.*
1	To Remaines last Mo	949 6 15½	By Charges Generall		175 1 5
14	To Cash	400 0 0	By charges Cattle		27 10 15
28	To Do	600 0 0	By Servants wages		182 13 0
30	To Do.	400 0 0			385 9 0
			By Accot: building		660 13 5
			By charges Dyett		67 14 15
			By Rems: vizt:		
			In cha: Merchand ..	795 0 0	
			In charges buildings	338 7 10	
			In charges Genll: ..	46 4 0	
			In Cash ..	55 6 5½	1235 1 15½
		2349 6 15½			2349 6 15

After many meetings and above 40 Coppyes of agreements altered this and tother way and

Presented Jeamshire-beag with rups: 500.

haveing all the People of Malda for our enemyes (they being Somewhat like the Pharises would neither suffer us by their good will to be happy nor Indeavour themselves to be Soe) this evening when some kind of agreement at distance was concluded on vizt: to Present Jeamshire beag with rupees 500: and lend him 500 rs: more for 4 mos: time without Interest he came to our house here for the aforesaid kindnesse he promises not to Molest us nor our businesse at our new Factory but let us Prize and Cure and Cundy our goods &ca. there we giveing a Tallica or list of what goods we have come in that he may have the accustomary dutyes on them from the Picars and weavors which we thought better to Concent to then to have all our goods goe to his Durbar to be chauped this kindness is absolutely against the Nabobs late phirwanna on us which orders us to leave this place and goe live at Malda forthwith and not offer to buy or sell any where but within Malda, therefore tis ordered and agreed that the summes aforemention[ed] on said termes be paid him and colourable notes of agreement to Satisfy Hernarraine the Nabobs phirwanna and these rascally people of Malda, be made and Signed on both Sides, and that letters be Imediately wrote to Dacca and to our Vaquel at Muxoodavad signifying the agreement we have made for the present with Jeamsirebeag that noe more money be spent on this business in neither of those places:

Fytche Nedham
Samuel Anthony

Sent advices to James price Vaquel at Dacca.

11 Sent advices to Jeames Price Vaquel at Dacca and alsoe to our Vaquel with Boolchund for our agreement with Jeamshirebeag &ca.

Came letters from Mr. Prickman.

12 Came letters from Mr. Prickman at Rajamaul which was answered the same day.

Jeamshire-beag called our picars and bid them goe to our new Factory.

Jeamshirebeag called our Picars giveing them Bettle and good words and bid them goe to us at our new Factory and prize their goods to us &ca.

Came letters from Mr. Prickman.

13 Came letters from Mr. Prickman.

Sent letters to Raja-maull.

14 Sent letters to Mr. Prickman at Rajamaul.

Jeamshirebeag ordered all notes formerly taken of our Picars Delolls &ca. to be delivered our vaquel most of which was presently done and the rest promissed when could be found.

Sent letters to hugly. 15 Sent letters of our proceedings to his worship &ca. in Hugly.

Mr. Prickman came from Rajamaull. 16 Mr. Prickman came from Rajamaul.

19 Began to prize our goods at our new Factory Called Englezavad.

At a Consultation

Present

Thursday. 20th

Mr Fytche Nedham Cheif
Mr. Jonathan Prickman
Mr. Samuel Anthony

Our troubles with the Governors of Rajamaull dayly Increasing and as yet noe likelyhood of any redress comeing from Dacca (which is the only place where it must be had) Jonathan Prickman was sent for from Rajamaul to advize what was necessary to be given whereby they may passe our business; for the present it is concluded on to present them with the following perticulers (if they will accept them) till our new pherwanna shall come to reverse those phirwannaes which order to take custome of us.

To Rajub Allee the Kings Duan 1 Clock 2 yds: Scarlett, 4 yds: orda: 2 Red and 2 green broadcloth, and 1 Multiplying Glasse.

To Ruffae Zumma the Nabobs Fouzdar 2 yds: Scarlett, 2½ yds: orda: broadcloth, 1 Multiplying glasse.

To Mamood Zumma Wackanevice 1½ yd: Scarlett 2 yards ordinary red Cloth 1 Multiplying glasse.

To Jaddoo Ray the Subaes Duan ½ yd: Scarlett, 1½ yd: orda: cloth 1 Multiplying glasse.

To Himradge Ruffea Zummaes Setesdust ½ yd: Scarlett 1 yd: orda: red cloth 1 pr: Sizzers 2 paire Spectacles:

Fytche Nedham
Jonathan Prickman
Samuel Anthony

Mr. Prickman went hence to Rajamaul. 20th Mr. Prickman went hence to Rajamaul.

24 We began to cure and Cundy goods in our new Corconna or workhouse.

Sent letters to Rajamaul. 26 Sent letters to Mr. Prickman &ca., at Rajamaul.

Came letters from Rajamaul. 28 Came letters from Rajamaul.

Sent letters to Rajamaul. 31 Sent letters to Rajamaul to Mr. Prickman.

For many dayes people from Jeamshirebeag, the fouzdar and Dawad Cawne the chief of the Pitan Merchants and the Dutch has been here and dealt with us about many things all tending to nothing but hindring our business which on all sides is endeavoured what possible yett hope shall be able to withstand all their evations this Munsoone and afterwards shall have time enough to Dally with them.

Accot: Currant Hugly is as last month.

Fytche Nedham
Samll. Anthony

	CASH.	Dr				PER CONTRA.	Cr.		
Octor.—		Rs.	As.	P.			Rs.	As.	P.
1	To Ballan [c]e last mo. ..	1223	12	0	11	By Accot: presents for what presented Jeamshire Beag Crowry of Malda to open our business and let us negotiate at our new factory notwithstanding the Nabobs and Boolchunds phirwannaes to the contrary ..	500	0	0
	To Ramnaut at Intrst at 1 r: 2a: Per Cent.	1150	0	0		By Jeamshirebeag for what lent him for 4 mos: time without Interest on the abovesaid Accot: ..	500	0	0
					15	By Saml: Anthony to defray factory choo ..	703	0	0
					22	By Do	147	0	0
						By Rarities for presents 1 clock with a larrum..	45	0	0
					30	By Samuel Anthony	453	0	0
							2348	0	0
						By Ballance ..	25	12	0
		2373	12	0			2373	12	0

Fytche Nedham

Englezavad Diary Mo: November 1681.

Teusday

At a Consultation

Present

Accot: Cash passed.

1st Mr Fytche Nedham Cheif
Mr. Samuel Anthony

Sent a Generall to Hugly.

The Accot: of Cash being perused was passed the remaines being Rupees 25 · 12 a: at the end of last mo.

A Generall letter being drawne up at large Signifying our new troubles &ca., was approved and Sent forward.

Fy: Nedham
Samuel Anthony

1st Prized Coloured Goods.

Sent letters to Mr. Prickman.

The fouzdar promisses to Come to our new factory.

The fouzdar beats the Shop kepers.

5 Sent letters to Mr. Prickman at Rajamaul with our vaquel and Presents before agreed on for divers troublesome people there Rumours from Malda are that the fouzdar is prepareing peons &ca., to Come and fight with and abuze us here at our new factory.

Prized coloured goods.

An agreement was made last night with the Fouzdar by Jeamshirebeag and Mera Syud beag that he Should Come hither to See us friendly (which he promissed to doe) by which meanes be might possibly get Somewhat of a present from us and not otherwise, and accordingly this morning early he came with a great Company of peons but the old foole at our doore Intending to shew Some power where he had nothing to doe beat some of the Shopkeepers and threatned others what he would doe if they lived here, and soe it was that our workemen and others to about 500: was gott together in less then ½ a quarter of an hower with bricks in each mans hand resolving to make him repent his folly as certainely he dearly had, had not we used our best Indeavours to appease them, yet notwithstanding Some was soe zealous not-Staying for orders made some of the Fouzdars people fell the Strength of their Armes and carry the Marks of Some brick batts away with them, the Fouzdar ere he went Sent a Complement to the Chief excuseing him selfe like a foole and denying what he had done &ca. Saying that he was in hast to goe a little farther and that on his returne he would visit the chief. Prized colored goods.

Jeamshirebeag offers to Send a Lascar of his own for our defence.

7 Divers rumours was Spread in Malda and Gopaulpore being Markett day about the Fouzdars actions yesterday all to our advantage.

Jeamshirebeag sent a Complement to us and seemed much concerned at the fouzdars late doeings offering to send a Lascar of his owne for our defence which Complement we returned with thankes adding that we conceived not that we wanted strength to deal with more then Such a fellow but on occasion (which pray god may never have) should make bold with him.

The fouzdar gone to Malda a back way.

It is reported that the Fouzdar is gone againe to Malda a back way for fear haveing heard a report that of he Came back by our factory we would give him a feast of Brick batts and that he would not be able to pass with his bones whole.

Prized coloured goods.

9 Do.

10 Do.

11 Prized white cloth as Tanjeebs and Mullmulls.

12 Do.

13 Do.

14 Do

15 & 16 being the Jentues holy dayes and Generall thanks giving to god that they have lived to eat of new corne with prayers for the increase of it all the yeare noe business of Moment could be done our people being absent. Meir Mossums Servant the Sekedar of Gopaulpore Purgona begins now to Bark at us threatning to doe many things against us which he will not be able to accomplish, and once or twice news was brought us that he had people ready to come and fight with us for what we know not but if he comes he will hardly escape soe well as the fouzdar of Malda did. In the evening arrived here from Cossumbuzar Mr. Wm. Steward and Samuel Carleton Chyrgeons to the Europe ships Prized Cossaes.

Mr. Wm. Steward and Saml. Carleton arrived here.

Came letters from Hugly.

19 In the evening Came letters from Hugly from his worship &ca Councell which was answered the same day.

Mr. Steward and Mr. Carleton went hence for Cassumbuzar.

21 Mr. Steward and Mr. Carleton went hence this morning for Cassumbuzar.

At a Consultation

Present

Wednesday 21

Mr. Fytche Nedham Cheif
Mr. Samuel Anthony

Presented Lol Cawne with 58 rs: and one ps: Chandeny.

Lol Cawne the Chupdar Sent by Boolchund to force us to leave this place to goe live at Malda haveing now for the present made friends with us and Jeamshirebeag is ready to depart to his Master after almost 2 or 3 mos: Stay here and for his Service done on our part it was first agreed to give him 30 rs: which he refused and blew at Saying he was ordered to take 5 rs: Per dyem and Such like making a great Stirr whereupon the Fouzdar and Crowry of Malda wrote to us to dispeed him quickly and considering our business hangs now upon a poynt it was resolved to give him 58 rs: and one ps: Chandeny which with much a doe at last was accepted on it was alsoe thought fitt and agreed on to write and send a letter to Boolchund Signifying how much we are dissattisfyed with this agreement and to desire his favor for the future &ca.

Genll: books of Accots: passed.

Our General books of accots: notwithstanding our Seconds absence and the little help we have here are brought up to this day perused and passed.

Warehouse accots: and charges Genll: Accot: passed.

Samuel Anthony brought in his warehouse Accots: which was read and passed and alsoe accot: of Charges Generall which was perused and passed as followeth :

	Samll: Anthony			*Dr.*	**Per Contra**			*Cr.*
Octor.—		Rs.	As.	G		Rs.	As.	G.
1	To Remaines last Mo: ..	1235	1	15½	By Cha: Generall	138	14	10
15	To Cash ..	703	0	0	By Charges Cattle	31	4	10
22	To Cash ..	147	0	0	By Servants Wages	187	1	0
30	Do.	453	0	0		357	4	0
					By Accot: building ..	630	3	0
					By Charges diett	52	1	5
						1039	8	5
					Per Rems: Vizt:			
					In cha: Merchd: .. 1005 2 0			
					In accot: building .. 419 9 10			
					In cha: Genl: 9 0 0			
					In Cash .. 64 14 0½	1498	9	10½
		2538	1	15½		2538	1	15½

Fytche Nedham
Samuel Anthony

Came letters from Mr. Prickman. 22 Came news from Mr. Prickman at Rajamaul.

Sent letters to Rajamaul. 24 Sent letters to Rajamaul.

Came letters from Rajamaul. 28 Came letters from Rajamaul adviseing that Rajuballee would not take his Present but returned it expecting ready Money

At a Consultation

Present

T[h]ursday the 29
Mr. Fytche Nedham Cheif
Mr. Samuel Anthony

Mr. Prickman from Rajamaul haveing for a long time glutted us with letters of Complaint of the Governors and many people in office there how Stiff they are and resolved to plague us and doe the honorable Companys priviledges and concernes all the Mischief they Can, and yet dayly grow worse by how much the more they See we are Necessitated being in Shipping time, and that noe remedyes for our Severall troubles here in this place nor yet there (both at present under one inspection appeares tho they have been very much urged from Hugly) by his worship &ca., to Mr. Samll: Hervy &ca., at Dacca and continuall large advices of all Sent from hence to both places soe that seeing noe redress from Dacca we are forced on extraordinary expences here to open our business else the Honorable Companys whole Investment must have lyen here in the Country till next yeare and we most certainly been greatly blamed, and how alsoe our condition is and has a long time been the same at Rajamaul. our Mint or coyning businesse is hindred at 8 a · Per Cent Custome more taken there then formerly by a trick or a Pherwanna from Hodjee Soffy Cawne issued out by Mistake or Misunderstanding of words to the Droga which at Dacca might then have been hindred with a word or two speaking (Hodje Soffy Cawn ever been a good friend to the English) alsoe Meirza Rajub Allee. Sheck Golom Mohudde, and Ruffea Zumma and other people in office in Rajamaul soe troubles us that a boat nor peon or any thing Can passe to or from Pattana or those parts without vast trouble and promisses of presents to fill their hungry desires which lately we ordered Mr. Prickman to doe in Some measure least our peter boates (upwards of 10000 mds: being dayly expected) be stopped, as certainly they will if we agree not with the Governors there before they arrive, and yesterday by advices thence we are informed Mirza Rajuballee refused and returned our present sent him (tho twas more then formerly his yearly present used to be) expecting 4 or 500 : rs : in ready Cash wherefore on Mature consideration tis thought fitt and agreed to write to Mr. Prickman some directions how to act and to order him to add some small matters of cloth to the abovesaid present or keep most of it and add about 40 or 50 rs: in money what success this may have know not but certaine it is they want always to be pleased at what charge soever till can procure phirwannaes on them and our governors here from Dacca which suppose might ere now have been gotten for ½ cost and damage the honble. Company has alreapy Sustained for want of them besides bringing their priviledges lately soe well Settled into question which is very Considerable.

Agreed to Send letters to Mr. Prickman.

Fytche Nedham
Saml: Anthony.

Sent letters to Mr. Prickman

29 Sent letters to Mr. Prickman at Rajamaull about the premisses before mentioned and 5 yd: Scarlet more to be Spent or not as shall find occasion.

Accot: Currant is as last Mo:

Fytche Nedham
Samll. Anthony

	CASH	Dr.			PER CONTRA	Cr.	
Nober.—		Rs.	As.			Rs.	As.
1	To Ballance last Mo. ..	25	12	15	By Saml: Anthony for charges Genl: expence	800	0
14	To Kissundass Intrst: at 1 r: 6 a. Per Mo: Per Cent ..	2000	0	19	By Do.	500	0
17	To Cheveldass Saw at Interest at 1 r: 6 a: Per Cent Per Mo:	2000	0	21	By Accot: presents given in money to Lolcaun Bulchunds chupdar that came with a phirwanna on us to leave this place and goe live at Malda ..	58	0
					By Pahlaud ..	1198	0
				27	By Saml: Anthony ..	600	0
					By Pahlaud paid his bill . ..	61	0
						3217	0
					By Ballan[c]e	808	12
		4025	12			4025	12

Fytche Nedham

MALDA OR ENGLEZAVAD DIARY for England COMMENCEING

the Primo December Anno 1681 and
ends the 30th November Anno 1682.

Recd: Per Defence and open'd
in Court 14th Septr. 1683.

Englezavad Diary Month December Anno 1681

1 Jeamshirebeages Vuckeel came to us and earnestly desired for his Master 1 yd: Scarlett for his Doll Geloff which was forced to give him that the Rogue does nott stop our business againe.

Prized Cossaes and Mulmulls.

At a Consultation

Present

Satturday 2 Mr. Fytche Nedham Cheife
Mr. Samuel Anthony

The Accot: of Cash being perused the remaines being Rups: 808: 12 a: was passed.

A Generall to Mr. Prickman was read approved and sent forward.

Fytche Nedham
Saml: Anthony

Jeamshirebeage goeing to Muxoodavad to Make up his Accots: with Sookanunds Sonn &ca. came from Malda last night to our new Factory here where we feasted him and kept him all night and this morning early he proceeded on his Voyage.

This eavening dispeeded 3 boats Goods to Hugly contains 28 chests and 25 bailes Sundry Goods Accot: the Honorable Company in charge of 3 peons with Generall advice thereof.

This eavening came letters from Mr. Prickman with a Dustuck from the Fouzdar of Rajamaul on all under his Government about Tanda and those parts not to stop or molest us or our business, alsoe 2 Coppies of our Charges Generall brought up but to the last of November 1680: (which will trouble us much to finish here haveing all our hands full of other business) alsoe advice the Hono: Companys Peetre boates arrived there the 30th past and was dispeeded the day after haveing before made the Governors our Friends.

Came letters from Hugly with Invoyce of the Flint Ware and Factors provisions and amount to Rups: 144: Sent for us on a Pattana boat by way of Rajamaul which is nott arrived yett with us.

11 Sent letters to Rajamaul and returned Golom Mohuddees Dustuck nott being well written for our purpose.

Sent a Generall letter to his Worship &ca. Councell in Hugly with Invoyce of what Goods sent them hence the 2d: Currt: amot: to Rups: 19921 and Diary for mo: November last.

The Fouzdar of Maulda Came this day to visit us and to make Friends with us. who told us of another Dustuck from Boolchund comeing on us with 4 or 5 horsemen to force us hence to Maulda to live there, he not haveing had anything of us to this time since he has been in place tho: he has been very hungry therefore tis thought fitt to Present him with 2½ yds: ordinary broadcloth and one Sitterngee of about 12 Coveds long and 4½ broad which will sett him up the one for spreading the other for his Pallankeen Chuttery.

14 Dispeeded hence to Hugly 1 boat Cossaes contains 17 Chests with advice thereof to his Worship &ca. Councell.

15 Came letters from Mr. Prickman at Rajamaul with 8 Cosseds bringing with them 8600 Rupees Siccaes.

This day came to us from the Fouzdar of Maulda the Coatwall and Droga of a Markett of which the Fouzdar has taken the Ezarra who by them his Agents sent his Salams to us signifying his desire to raise his Markett and bring it near our new Factory requesting the Cheife to shew his People a place where we approve of it to be Convenient for our people and alsoe to give it a name which we did to pleas him. and called it New Markett or Nya haut, the reason we gave it nott a name tending or relateing to the English was because the ground is not in our power and to avoyd many Complaints which would be brought before us. and nott being able to doe justice twould be but a disgrace to us, and besides it will be in the Towne which we have now made about our Factory and Called Englezavad signifying a Towne of the English makeing.

At a Consultation

Present

Thursday the 16 Mr. Fytche Nedham Cheife
Mr. Samuel Anthony

The Generall Boockes of Accot: being brought up to this time were passed.

The Charges Generall accot: for last mo: were brought in and passed as followeth Vizt.

SAML. ANTHONY. *Dr.*

November—	Rs.	As.	P
1 To remaines last month ..	1488	9	10½
15 To Cash ..	800	0	0
19 To Ditto ..	500	0	0
27 To Ditto ..	600	0	0
Amots: to Rups:	3388	9	10½

PER CONTRA. *Cr.*

		Rs.	As.	P.
By cha: Generall		169	9	0
By cha: Cattle ..		28	12	0
By Servants Wages		194	6	0
		392	11	0
By Acco: Building		767	0	0
By charges Dyett		67	6	0
By Packingstuff Viztt:				
Wax 7½ mds: kings wt: at 25 rs; Per md: ..	187 0			
Cotton 2 mds: at 10 rs: Per md:	20 0			
Gunnies 10 Corge at 2 rs: Per Corge ..	20 0			
		227	0	0
By Remaines Viztt·				
In cha: Merchandize	1472 9 10			
In Accot: Building	403 9 10			
In Cash ..	58 5 10½			
		1934	8	10½
Amounts to Rups:		3388	9	10½

Mahdeeve Ray Jeamshirebeags Petesdust being verry busy to stirr his Master to molest us therefore to stop his mouth twas thought fitt to give him 20 rs: he alsoe haveing been promised something before thought by our delayes we were minded to deceive him, and charges of this nature Cannott be avoided till can gett Shastah Cawnes Phirwanna which hope will be quickly :

Fytch Nedham
Samuel Anthony

A Horseman called Sheek Yacoob came from Boolchund on us with a Pherwanna from his Master to carry us to Maulda (as before whome we answered that we had obeyed the Nabobs and Boolchunds former orders and kept a Factory at Maulda haveing allwayes a Gomosta there according to our late agreement with Jeamshirebeag (and what could he demand or desire more) and that we would send our vuckeel tomorrow thither who should give a full answer to what he should have to say to us and gave him 5 rs : for a taste to coole him till our businesse should be done, this we here was sent partly by Jeamshirebeags lying Complaint of us againe there and Hernarraine vuckeel who alwayes is there in his Durbar &ca.

20 Our Vuckeel went this morning to Malda where he had much dispute with Jeamshirebeag the new Ameen and the Horseman from Boolchund and others to little purpose or effect for they seeme nott minded to end any quarrells with us, but on the contrary foment what they Can that they may gett by it, as they must continually doe till our Friends at Dacca will please to remidy us by the Nabobs Pherwanna thence which will settle our business and Customes.

21 In the eavening came letters from his Worship &ca. in Hugly advising that they at Dacca feared a Generall stop of the Honorable Companys business on the Dutch score of carrying soe much Rice &ca. provisions from these parts, and that we unhappily be included therein till it be well understood.

Very late at night we wrote a Generall to his Worship &ca. in answer to theirs and about our owne greevances and troubles here at present, and advised of 2 boat Tanjeebs and Mulmulls contains in all 26 chests which we now with this dispeed thither in charge of Ibraim beage and 1 Peon.

24 Came the Horseman from Boolchund with open mouth to have us to Maulda saying that Jeamshirebeage alleidges that he has not received the Chop mony of our Picars and weavors and that thereby the Nabob looseth his Rents, and that alsoe we bring his Ryotts from Maulda to live here &ca. which are all gross lyes, therefore we refused to goe to Maulda till should have business of our owne there, and told him more over that he could nott end our business here with that Varlett Jeamshire beag therefore his best way would be to take Jeamshire beag and our Vuckeel to his Master Boolchund there we might expect Justice and nott here where our adversary is in a manner our Judge which was agreed on.

25 Dispeeded one with 12 chests Cossaes, Tanjeebs, and Mullmulls to Hugly with Generall advice thereof and of our troubles desiring they would press our case to Mr. Hervy &ca. at Dacca

for a remedy else our business next year will goe on but badly and make our large remaines occationed thereby hard to be gotten in.

At a Consultation

Present

Mr. Fytch Nedham
Mr. Samuel Anthony

Pahlaud our Poronia Gomosta haveing earnestly desired our leave to come from Poronia his time promised for marryage being near and if he slips that he Cannott be Marryed till next year according to the Custome of the Country therefore tis thought fitt to call him away and give him leave rather then he should take leave and come thence and leave our businesse at 6 · and seavens. his Marryage is to be at Pattana whence he cannot be expected in more then a month at soonest-wherefore have pitched on Ruddermun formerly in our Eye to send in his roome whome well hope will doe as well as the other being well acquainted wth those parts and have made his wages 8 rs: per month and promised him encouragement according to his deserts, and moreover Pahlaud haveing wrote to us that he wanted more mony to give on Peetre and Turmerick wherefore we enorder Rups: 2000: to be paid the said Rudermun on do: Accot: to goe with him hence this day by boat in the Maham River which has water all the year and as said is free from Rajamaul Government it goes up hence to Huldybarry which is high land and by the Riverside and Saltpeetre and Turmerick is to be had thereabouts. it lyes about 8: or 10: Coarse wind of Poronia we have alsoe given him Coppy of those Instructions delivered Allabardy and Hergololl and enjoyned his strickt observance of them and alsoe of some additions which concernes our present business as to takeing the Honorable Companys concernes from Pahlaud and goeing on with the Dadinee or Imprest of Saltpeetre and Turmerick and allsoe to observe the River well from hence to Huldebarry whereabouts we conceive if ever the Honorable Company settle a Factory in those parts it will be thereabouts on that Riverside:

Fytch Nedham
Samuel Anthony

Dispeeded hence this eavening one boate containing 11: Chests white Cloth, with Generall advice thereof to his Worship &ca. in Hugly.

28 Dispeeded hence on one boate 18 chests white Cloth with Generall advise to Hugly.

29 Wrote to Mr. Prickman at Rajamaule to forward the Rareties, Factors provisions &ca. sent thither from Hugly to be forwarded to us soe long Since, and for the remaines of our Silver &ca.

31 Dispeeded hence to Hugly 2 boats with 28 chests Cossaes, Tanjeebs. and Mulmulls with Generall advice thereof to his Worship &ca. Councell.

	CASH.			*Dr.*
	December—			
1	To Ballance last mo. ..	808	12	0
15	To Sicca rs: from Rajamaul ..	8600	0	0
27	To Ramnaut at Int: at 1¼ r: Per Cent Per Mo: ..	2600	0	0
	Amots: to Rups:	12008	12	0

	PER CONTRA.			*Cr.*
	December.—			
1	By Roasewater 2 chests for Presents ..	60	0	0
6	By Saml: Anthony for Genll: Expence ..	448	0	0
7	By Acco: presents to Jeamshireboags Vuckeel and to the Droga of the Chopmaul ..	14	0	0
15	By Kissondas Saw principall	2000	0	0
	By Acco: Int: on do. 31 das: at 1 l r: 6 a: Per Cent Per mo: ..	28	6	6
	By Chevilldas principall	2000	0	0
	By Accot: Int: on do: 28 da: at 1 r: 6 a: Per Cent Per mo: ..	25	11	0
	By Accot: presents paid Mahdeave Ray Jeamshirebeags Petesdust to be quett and nott invent new troubles ..	20	0	0
18	By Saml: Anthony for Genll: expences ..	752	0	0
26	By Rudddermun our Poronia Gomosta on Peetre &ca ..	2000	0	0
28	By Saml: Anthony for Genll: expences ..	600	0	0
	By Pahlaud and Rambuder eavening their Joynt Accots: ..	362	7	4
	By Muttuck and Trepore Saw &ca. for 462 ps: Mulmulls ..	3182	8	0
	By household necessaries for 53 ps: China ware great and small	63	0	0
	By Accot: presents for 1 large Sitterngee given the fouzdar of Malda	18	0	0
	By Rajamaul residence short charged to that place in Janry: past	4	15	6
30	By Samuel Anthony ..	400	0	0
	By Cha: Genll: 1 gold Mohur presented the Dutch Doctor ..	12	4	0
		11991	4	4
	By Ballance ..	17	7	8
	Amounts to Rups: ..	12008	12	0

Englezavad Diary Month January 1682.

1 Came letters from Mr. Prickman at Rajamaule adviseing of 120: Cossitts being robbed goeing to Pattana.

Att a Consultation

Present

Mr. Fytch Nedham
Mr. Samuell Anthony

The Account Cash for last month after perusall was passed the remaines being Rupees 17: 8 a: 8 pice. A Generall letter being drawne up about our troubles with Jeamshirebeage was approved and ordered to be sent forward with 32: chests white cloth by boat to his Worship &ca. Councell in Hugly with which alsoe went Coppy of our charges Generall boocke for last Yeare:

Fytch Nedham
Samuell Anthony

4 Sold Lead 3: mands 37½ Seers at 9 Rups: Per Maund.

5 Dispeeded hence to Hugly 25: chests and 2 bailes Goods on 2 boats in charge of 2 Peons with Generall advice thereof to his Worship &ca. Councell. Distributed to divers People ¼ yd: Scarlett for dagger cases.

6 Wrote letters to Rajamaul adviseing Mr. Prickman to be Carefull of the Factory there whilest any of the Honorable Companys Treasure is with him for fear of Thieves for we hear robberies are very rife in those Parts as well as here &ca.

7 Dispeeded hence to Hugly 7 Chests Goods (being the last that will goe hence this Year) on one boat in cha: of Ramsinge a house Peon with Generall advice to his Worship &ca.

8 Came Letters from Rajamaull.

9 Ditto.

This day Jeamshire beage and Dowd Cawne and Meira Syud Beage came to our new Factory here to make Friends between Jeamshire beage and us or rather to feel our intentions and to make us consent to keep and continue of Factory at Maulda which we have nott yett quite taken away we still paying Rent for those houses at first taken though we have noe Goods in them least haveing putt them off we should by higher powers be forced to take them or other houses againe, till we can gett the Nabobs Pherwanna to free us from the Tiranny of these Rascally People Round about us which hope will be quickly.

9 Presented Obdula Caune with ¼ yd: Scarlett.

Wrote a Generall letter to his Worship &ca. Councell at large concerning our troubles here with which alsoe went Invoyces of all our latter Goods sent hence to Hugly this year, and a paire of our last years Generall Boockes on a Dingee which promissed to be in Hugly in 3½ daies &ca.

13 Sent letters to Mr. Prickman desireing the remaines of our Silver from the Mint we being in great want of it.

16 Sold Lead 10: mds: 4½ Seers at 9 rs: Per maund.

17 Presented Meir Mossum our Crowry here 1 yd: Scarlett he earnestly desired it.

18 Came letters from Mr. Edward Littleton &ca. in Hugly giveing Mr. Nedham licence to repaire thither &ca.

21 Came letters from Mr. Littleton &ca. adviseing of the receipt of all our Goods Sent hence with our Invoyces of all and that they were dispeeded to the Ships which much rejoyceth us that we have soe well finished our businesse in soe short a time and in the midst of such great troubles as we have and doe undergoe and shall till our Friends at Dacca will please to help us by getting the Nabobs Pherwanna for us.

Sent letters to Mr. Littleton &ca. Councell with our Diary for last mo: &ca.

Came letters from Meir Mossum Crowry now in Rawpore to call our Vuckeel which at this time cannott well be spared soe farr from us haveing howerly to doe with one or other.

Came a Horseman on from Coja Enaitula with a letter from Meir Mossum forbiding us to by or sell here and alsoe ordering us to be gone hence and him to carry our Vuckeel to Meir Mossum, nither of which we can well, or shall we obey till have orders from Hugly; the King, or Shastah Cawnes Dustuck ordering us to leave the Countrey.

This day alsoe Boolchunds Horseman from Maulda thundring at our Dore and storming to have us to Maulda which was his resolution or he would kill, or be killed in our Factory and many such like huffing words but hope to coole his Courage ere he goes hence. The other Horseman alsoe is mighty earnest to have our Factory broken downe which will be a worke beyond both their Powers.

At a Consultation

Present

21 [January] Mr. Fitch Nedham Cheife
Mr. Saml: Anthony

Jeamshirebeag haveing lately offered us divers affronts which we could nott bear especially his sending divers Peons into our house at Maulda whilest we were here who pulled out 6: or 7: weavors our Servants out by force boating them and halling them before Jeamshire beage who greeviously beat and imprisoned them and toock Gonnagarree mony of them and security that they would work no more for us and then after 3: or 4: daies lett them goe and then alsoe caused the Drum to be beat throughout Maulda forbidding all weavors and Picars comeing to us tó make up their Accots: with us which made us send our Vuckeel to Maulda ordering him to declare in the Kings and sherraes name that we had taken away our Factory wholly from Maulda and that he should answer for our remaines and such like for the reasons afforesaid which he did in Jeamshire beages Durbar after haveing discoursed our whole troubles since we came before the Cozzees Droga of the Adollutt, Ameen, Fouzdar, Boolchunds Horseman and divers Merchants desireing them to be wittness of what they had heard on both sides &ca. and now Boolchunds Horseman being very troublesome to us tis resolved and agreed on to give him this answer if he will take it and write to his Master the same that is that we have brought away our Factory from Malda for many such reasons as aforesaid resolving never to returne, nevertheless in Complyance to his Masters orders we sett still in our owne houses doeing nothing of merchantdize till the Nabob or his Master will please to favour us with their orders to trade here according to the Kings Phirmaund lately granted us and many other Pherwannaes Neshaunes &ca. alsoe tis thought convenient that we endeavour to make a Mahozzer of our troubles which if can well be done may fasilitate gitting Pherwannaes for us without which this Year shall nott be able to doe anything.

Meir Abdull from Rajamaul wrote us word he was Comeing hither and desired by all meanes 2: yards green ordinary Broadcloth which is ordered to be sent him because he may be serviceable to us in divers wayes, if he will and without being pleased to be sure he will nott he being a very coveteous Impudent Man. Divers of our Picars and weavors Jeamshire beage has sett to Complaine of our cheap prizeing their Goods but as luck was could make nothing of it unless they first make Meira Syud beag a Coffer, who was putt upon us Ameen for that purpose, truly a very good just man and one that has holpen us mightily and does still on any Occasion wherefore for these reasons tis thought fitt and agreed to present him with the following perticulars Vizt:

Green broadcloth ordinary for a Cloak ..	3 yards
Scarlett	½ yards
Cristall ware, 1 Saek glass, 1 Cup and 1 plate to Ditto	

The Generall boocks of Accotts: being brought up to this time were Perused and passed and alsoe the Warehouse boocks and Charges Generall for last month as followes Vizt:

	Saml. Anthony.			*Dr.*	**Per Contra.**			*Cr.*
December—								
1	To Remaines last month ..	1934	8	10½	By Charges Generall	127	8	10
6	To Cash ..	448	0	0	By Charges Cattle	28	15	10
18	To Ditto ..	752	0	0	By Servants wages	189	4	0
28	To Do.	600	0	0				
30	To Do.	400	0	0		345	12	0
					By Charges Dyett	71	0	0
					By Accot: Building	794	13	5
					By Packingstuff Vizt:			
					Guzzees 20 Co: at 11¼ is .. 225			
					Tentees 20 Do: at 6 r: 8 a: is .. 130	355	0	0
						1566	9	5
					By Remaines Vizt:			
					In cha: Merchanize 1992 10 0			
					In cha: Building .. 326 9 0½			
					In cha: Generall .. 28 0 0			
					In Cash .. 220 11 15½	2567	15	5½
		4134	8	10½		4134	8	10½

Fytch Nedham
Samuell Anthony

26 Came Letters from Ruddermun at Poronia Complaineing of Pahlauds slackness to give our Imprest on Saltpeetre and Turmerick till the time of year was past soe that now very few will take Dadinee haveing brought their business soe farr with their owne Stock therefore hope they will gett some of both Sorts for ready mony with some small difference in the price, and what they doe as yett give out Dadinee for is nott for a certaine price, but to have 5 rs: more then the first and Cheapest Bazar nerrick which is the best termes they could for this time bring them to, and tis thought twill not come out much different from what formerly advised to Hugly.

27 Sent Letters to Pahlaud ordering him that after he has delivered all the Honorable Companys concernes to Ruddermun to repaire hither-

and alsoe wrote to Ruddermun to give out what Dadinee possibley he Can on Saltpeetree and to gett about 5000 Mds: Turmerrick if possible, and to have a great care of doeing anything in the Pattana dominions &ca. at large.

Att a Consultation

Present

Tuesday 31 Mr. Fytch Nedham Cheife
Mr. Samuell Anthony

The Horseman from Boolchund haveing ma[n]y d[a]ies tormented us at our Dore and threatned to enter by force and pull us out and many such huffing words (which could nott scare us we knowing his power) yett seeing he will nott be answered nor be gone tis resolved to write this day a plaine letter to Boolchund signifying why we have left Maulda and that we sett still on our owne houses in hopes of the Nabobs and his favour therefore in the mean time desire him to Call away his Horseman which troubles us soe much for nothing &ca., this with a Coppy of it is alsoe ordered to be sent to Mr. Job Charnock &ca., in a Generall to them, whome we have desired to assist us at least to gett the Horseman called away which we hope will be done on his receipt of our Letter, if he doeth nott of himselfe goe before.

All our business of the last year being over and our Accounts with our Picars and weavors being made up and our remaines comeing in and the Generall boocks of Accotts: brought up to this time and noe great business in this Factory left to doe till have orders againe to give out Daudinee which suppose will nott be near about us till can gett the Nabobs order. or come to better agreements with our petty governors round about therefore seeing our business in this posture and that the cheife can well be spared without any apparent damage to the Honorable Company's affaires in this place, it is thought convenient that he repare to Hugly as soone as possible, according to licence granted him thence that being present with the Councell he may open our case better to them then by letter and Consultations the best way for a remedy without which our business for this year will goe on but badly and many bad Customes in this Countrey allready is and must of necessity be made which will be hard to be broken afterwards, Customes in this Country being Esteemed equall with written Laws, therefore tis agreed and ordered that Mr. Nedham deliver the Cash to the charge of Saml: Anthony till his returne which is this day the end of the month Rups: 95: 11 a: 14 p: and alsoe the 2 Originall notes for the 2 Parcells of Ground brought here for the Honorable Company and Coppies of all Phirmaunds, Neshaunes, and Pherwannaes, now in his hands relateing to the Honorable Companys affaires and all other boocks and Dufters and notes for monyes oweing or otherwise according to a list of Do. delivered him, for the Honorable Companys use and in the cheifes absence the said Samuel Anthony is hereby ordered to gett in and receive what moneyes or goods of the Companys Sorts is brought in on Accot: our remaines of last yeare which all have promised by writeing to clear in a month that at the Cheifes returne when Dadinee is to bee given out we may bring our Weavors and Picars to a better method beginning Clear with them; alsoe he is ordered hereby as fast as mony comes in of our remaines or from the Mint or otherwise to pay of what standing out at Interest, and to goe forward with Building the remaining part of the Factory Wall towards the River that it may be finnished before the Raines, and what other business shall happen of absolute necessity to be done with all caution and adviseing with our Vuckeel.

Account Currant Hugly passed Vizt:

ACCOTT: CURRT: HUGLY.				*Dr.*	PER CONTRA.			*Cr.*
January—								
9	To Sundry Accotts	.. 121975	13	3	By Ballance last mo:	.. 224526	15	7
	To Ballance	.. 102551	2	4				
	Rs.	.. 224526	15	7		224526	15	7

Fytch Nedham
Samuell Anthony

31 Late at night when the Horseman from Boolchund saw that we had dispeeded our Letters to Mr. Charnock &ca. to Boolchund, he went from our Dore to Maulda againe.

Here is newes that Hodge Soffy Cawnes Son that was the Kings Duan at Pattana is comeing downe to the Government of Hugly.

CASH.	*Dr*			PER CONTRA.	*Cr.*		
Janry.—							
1 To remaines last mo:	17	7	8	1 By Saml: Anthony	648	0	0
To Lead 3 md: 37½ sr: at 9 rs: Per maund ..	35	7	0	By Ditto ..	500	0	0
					1148	0	0
5 To Ramnaut at Int: at 1 r: 4 a: Per Cent Per mensem ..	1100	0	0	By Ballance ..	95	14	11
16 To Lead 10 md: 4½ sr: at 9 rs: Per md: ..	91	0	3				
	1243	14	11		1243	14	11

Fytche Nedham

At a Consultation

Present

[February]

Mr. Fytch Nedham: Cheife
Mr. Samuel Anthony

The Accot: Cash for last month being perused was passed the remaines being Rups: 95: 14 a: 11 p: was delivered to Saml: Anthony.

Fytch Nedham
Samuel Anthony

Englezavad Diary Month February 1681/2.

3 Sold 100 mds: Lead at 8¾ rs: Per maund.

Received letters from Comaul Cawne the Fouzdar of Huldebarry desireing a Correspondence with us and profferring us Timbers for our Building if in case we were not yett supplyed from other parts.

Prized white goods.

This night the Cheife proceeded towards Hugly carrying with him our Diary and Consultations for month January.

7 This morning came Boolchunds Asswar from Maulda being dispeeded by Jeamshirebeag to returne to Muxoodavad wherefore he came to our Door to see what he Could gett uppon which we desired the Dustuck that he brought on us from Boolchund to be delivered us but he in a huffing manner refused to deliver it under 150: or at least 100: Rups: but at last his Courage was cooled and delivered the Dustick upon which it was agreed to give him 20 rs: with which he was very well contented and to his Servantts 2 rs: and afterward filled their Bellies with Ketcherree and sent them away.

9 This day Meir Abdull went hence to Rajamaul leaveing Mamood Hyatt his Brothers Son to officiate in Maulday.

10 Sent Letters to his Worship &ca. in Hugly and advised of many rogueries made by Jeamshirebeag on us, with it alsoe went the Mahozzer on Maulda side about our troubles with Jeamshirebeage.

13 Sent Letters to Mr. Prickman at Rajamaule desireing him to send us some money to defray the Generall Charges haveing none in the House.

15 Came newes from Maulda that the Picars has made a false Chop for which Jeamshire beage imprissons them and demands great summes of them for the loss he pretends he has Sustained thereby, which does hinder our remaines to come in

16 Came letters from Rajamaule with 4000: Rups: Sicca.

23 This day Sybram Ray the Fouzdar of Maulda went to Muxoodavad to give an Accott: of the great Rogueries that has been Committed of late in Maulda.

26 Our Maulda Picars and Weavours bringing noe Goods att present complaining that they are ready in their Houses but dare nott bring them over the water for fear of Jeamshirebeage who layes watches at every Gaut for them wherefore twas thought Convenient to send our Vuckeel to Jeamshire beag to know why he will nott lett our Picars and Weavors bring in their remaines.

27 This day our Vuckeel Came from Maulda haveing had great disputes with Jeamshirebeage who does what he cann to have us live at Maulda declareing that he will not lett the

Weavors bring their Remaines here, and that Hernarraine will give answer for what he does to stop our business.

Cash.	Dr.			Per Contra.	Cr.		
1 To Remaines last mo: ..	95	14	11	3 By Samuel Anthony	458	0	0
To Lead 100 mds: 12 sr: at 8¾ rs: Per maund ..	877	10	0	8 By Samuel Anthony	419	0	0
10 To Kissondas Saw at Int: @ 1 r: 5 a: Per Cent Per mo: ..	2000	0	0	11 By Peranaut his Principall ..	2000	0	0
17 To Sicca Rups: from Rajamaul	4000	0	0	By Accot: Int: on do. 7 mo: 25 da: at 1 r: 2 a: Per Cent Per month	176	4	0
				By Account Presents Vizt: given the Cozze to Chop the Mahozzer for Maulda side .. 47 given Sheek Yacoob Boolchunds chupdar at his goeing away .. 22	69	0	0
				22 By Kissondas Saw his Principall ..	2000	0	0
				By Accot: Int: on do: 17 da: at 1 r: 5 a: Per Cent Per month	15	0	0
					5137	4	0
				By Remaines ..	1836	4	11
	6973	8	11		6973	4	11

Samuell Anthony

Englezavad Diary Mo: March Anno 1682.

1 The remaines of Cash for last mo: is Rups: 1836: 4 a: 11 p:

3 Came Letters from Poronia and Cassumbuzar.

4 Sent Letters to Poronia.

5 Sent Letters to Hugly with a Mohozzer for this side the River.

15 These 8: or 10 last daies being the Hindoes feast little or noe business offered.

17 This day the Cozzees Gomosta of Gopaulpore came to our Factory and brought newes that Coja Enatula had sent an Horseman from Dacca with an order to his people here nott to hinder our business but to lett us give out our Dadinee and trade freely.

19 This morning sent our Vuckeel to Maulda who went to Jeamshire beage and had great disputes with him about our Tallica he declareing that he has had noe Tallica for 3 : months to whome our Vuckeel gave this answer that ever since that our shipping business was done we have had noe goods come in but was hindred by him wherefore could nott expect any till he would lett our Picars and Weavors bring in their Goods, and told him that when he suffered our goods to come in we would give him his true Tallica upon which Jeamshire beag promised nott to hinder our business but tomorrow would order the Drum to be beaten to order all our Picars and Weavors to Come to us and bring in their remaines.

20 Came Letters from Rajamaule with 2000 : Rups : Siccaes.

22 These 8 : or 10 : daies there has hapned great fires which has burnt downe most part of Maulda after which Jeamshire beag has raised such great Taxes of the Polemony upon the Poor Weavors &ca. who at present have nothing left but all consumed by the fire which causes a great many of them to run away from that Tyrannous Government.

26 This day the Drum was beat about these parts to order all Ryotts &ca. to comply with Boolchunds orders who has now this place under his Government: for the Kings Accot: Coja Enatula beeing Taggeerd.

This day the Malda Cozzee sent to us to desire a little Roaswater haveing great occation for it and none to be gott in Maulda wherefore 4 bottles were Sent him.

28 Sent Letters to Rajamaule with advice of the receipt of 2000 rs : Siccaes.

	CASH.	*Dr.*		
	To remaines last mo: ..	1836	4	11
20	To Siccaes from Rajamaule ..	2000	0	0
31	To Scarlett used by Saml: Anthony ¼ yard ..	2	8	2
	To Broadcloth ordinary for Do. 3 yards ..	9	0	0
		3847	12	11

	PER CONTRA.			*Cr.*		
	By Peeranaut his Principall ..			1500	0	0
	By Accott: Int: on do: Vizt:					
	1000 rs: 8 mos: 18 da: at 1 r: 2a: Per Cent ..			96	12	0
	500: 7: 16: at 1: 2:			46	6	0
8	By Samuell Anthony ..			320	0	0
21	By Ditto ..			500	0	0
25	By Acco: Sallary to this day to divers Vizt:					
	Fytch Nedham the ½ of ½ years Sallary at £40 Per an:	88	14¼			
	Jona: Prickman @ £20 Per an: ..	44	7			
	Saml: Anthony do: ..	44	7			
	George Stone ½ years Sallary at £10 Per an: ..	44	7	222	3	3
				2681	5	3
	By Ballance ..			1166	7	8
				3847	12	11

Samuell Anthony

Englezavad Diary Month April 1682.

2d This day arrived Punchanund Ray Crowry for Boolchund for this side of the River.

4 Sent the Vuckeel to the new Crowry here who promised all kindnesse inageinable.

5 This night about 9 a clock there happened a great Storme of wind and haile which broke downe most part of our Thatch conveniences.

6 This day Punchanund Ray sent for our Vuckeel butt sent him an excuse that he was out of the way but would send him tomorrow.

7 According to our promise Sent the Vuckeel to Punchanund Ray (who found all our Picars put in Prison to give a writeing for what goods

they brought to us last yeare) with whome had great disputes and demanded a writing of the Vuckeel for what Jeamshirebeage has allready taken of our Picars &ca. and what he does now take of the Picars on this side the River, to whome the Vuckeel gave this answer (well knowing that if we doe give any writing here it will bring a bad custome which will be hard to be broken) that at present we doe nott give Jeamshirebeag any writing but in time of our Shipping upon the Nabobs Pherwanna and Boolchunds asswars wee were forced to give a Tallica of what our weavors brought in that our shipping Monsoone might nott be hindred that at present the Cheife nott being here we doe not give any Daudinee but sett still upon which he was Contented and soe dispeeded the Vuckeel and lett the Picars and Weavors goe about their businesse.

8 This day the Dutch Factory was besett by the Pitans People but were drove back againe with Co[n]siderable blows by the Dutches Peons their quarrell arriseing by their Servants that fetch water from the River side.

9 The q[u]arrells between the Dutch and Pitans continued, the latter declared that at the Dutches goeing to their Garden (which they usually doe on this day being Sunday) they would offer violence to them but by the Mittigation of Syud beag the Dutch tarried at home and the Pitans returned to their houses but noe frindship made, the Crowry all this while nott dearing to show his head fled out of towne saying he went a-Hunting.

15 This morning very early the Dutch Derictore passed by to Maulda.

17 This eavening the Dutch Derictore received a Seerpaw from Shasta Cawne for the great present they have lately gave him.

20 The Dutch calling all our Picars and Weavors proffering them great Daudinee if in case they will bring a writeing to bring us our remaines and take no more Dadinee of us which causes a great many of [them] to flock thither but as yett Can nott understand whither they have received any Dadinee or them or noe wherefore called all our Picars &ca. giveing them fair promise of new Dadinee at the Cheifes arrivall whome we told them was on the way hither

23 This afternoone the Dutch Directore passed by here towards Hugly.

	Accot: Currt: Hugly			Dr.		Per Contra.			Cr.
Aprill 1682—									
31	To Saltpeetre 45 Mds. ..	35	2	3		By Ball: last Mo:	102551	2	4
	To cha: Merchandize on do ..	5	0	0	Janry:	By Sundry Accotts: ..	144	0	0
	To Ballance ..	137463	3	1		By Flint ware ..	100	4	0
					Aprill	By Sundry Accos:	4335	15	0
					Janry:	By Sundry Accotts: ..	372	0	0
							107503	5	4
					Aprill 19	By Cash ..	30000	0	0
		137503	5	4			137503	5	4

Samuel Anthony

Accott: of Cash for this month Vizt.

	CASH.		*Dr.*			PER CONTRA.		*Cr.*	
1	To Ballance last month ..	1166	7	8	1	By Samuel Anthony ..	500	0	0
30	To Acco: Currt: Hugly Siccaes recd: ..	30000	0	0	22	By Samuel Anthony ..	250	0	0
	To Acco: Batta on 9000rs: Siccaes Sold at 12a: Per Cent	67	8	0	30	By Rajamaul Residence paid Sookdeave Vuckeels wages 9 mo: to this day ..	90	0	0
	To Gunnesham Acco: his remaines ..	383	12	6			840	0	0
	To Sungutdass ..	381	3	0		By Ballance ..	35340	7	5
	To Crepoll Deloll..	36	0	0					
	To Puttunnemull	600	0	6					
	To Weavors Elatchaes ..	262	3	9					
	To Weavors Seersuckers ..	15	8	0					
	To Weavors Tanjeebs ..	163	14	6					
	To Weavors Mulmulls ..	184	10	0					
	To Weavors Chandenies ..	3	9	0					
	To Weavors Charconnaes ..	234	7	0					
	To Muttuck and Treepore &ca	2093	1	0					
	To Moneram Deloll	80	0	0					
	To Weavors Reyns	253	2	6					
	To Cassaes Orrua to divers here and at other Factories for their use 11: ps: ..	61	0	0					
	To Tanjeebs 3: ps: spared ..	22	0	0					
	To Seersuckers 9 ps: ..	51	12	0					
	To Chandenies 8 ps: ..	42	0	0					
	To Elatchaes 7 ps:	38	8	0					
	To Nehallewars 3ps: ..	11	4	0					
	To Orungshies 6 ps:	19	8	0					
	To Charconnaes 3ps: ..	9	0	0					
		36180	7	5			36180	7	5

Samuell Anthony

Englazavad Diary Month May Anno 1682.

3 Nr. Nedham arrived here from Hugly with 30000 Rups: to begin our Dadinee for this Year which being entred in Aprill makes that mos: remaines Rupees 35340: 7 a: 5 p:

5 Mr. Prickman came from Rajamaule

6 Sent Letters to Hugly adviseing of a Pherwanna issuing out from Hodge Suffy Cawne to Rajaballe ordering him by vertue of a Husball Hookum lately came from the King to take 3½ Per Cent of us at Rajamaull unless Can shew the Governors of Suratts sunnuds that we have paid Custome for said Goods there &ca.

7 Came a Generall from his Worship &ca. in Hugly.

11 Punchanund Crowry of Gopaulpore Purgona came to see us promiseing us all favor in his power who with the Jimmedar also asked when we gave out Daudinee wee answered when they had made some agreement with us about our weavors nott to plague them as last Yeare and to force from them our Imprest mony to pay ould arrears of rent and such like as Jeamshire beage did last year.

12 Came letters from Rajamaule adviseing of a boate sunck at the Durbar in a Storme for want of a Dustick to goe forwards.

13 Sent letters to Mr. Prickman at Rajamaule
Sent letters to Poronia about all things necessary.

16 Mr. Nedham haveing delivered to Mr. Anthony all things belonging to the Honorable Company sett out for Cassumbuzar according to his Worships order to him, though it bee at present a very busy time with us here, and hopes he shall returne quickly it being now time to give out Daudinee and to eaven Accotts: with our Picars and that our Boocks may be Ballanced in time.

24 Ramnaut haveing want of his mony in our hands desired it might be paid him which was done.

At a Consultation

Present

Satturday 30 Mr. Fytch Nedham Cheife
Mr. Samuell Anthony

Haveing had noe new Daudinee or Imprest given out here since August last, our Muttsuddies and Taggadgeers haveing murmurred for money ever since January last though they have had enough to maintaine them very well till now wherefore findeing that this way of giveing them the Dustoore spoyles them and makes them proud and never contented and to avoyd a bad name to our Selves which by this way at length might come undeservedly we resolve henceforward to place the Dustoor to Accot: of Cash and make those Servants settled monthly wages according to their deserts, which will keep them better to their duty and make them more humble which stipends are to comence the first of this mo:

Fytche Nedham
Samuell Anthony

ACCOTT: CURRENTT HUGLY. *Dr.*				PER CONTRA.	*Cr.*		
To Ballance	.. 137503	5	4	By Ballance last mo:	.. 137503	5	4

	Cash.	Dr.				Per Contra.	Cr.		
1	To Ballance last mo:	35340	7	5	4	By Saml: Anthony	326	0	0
30	To Reyngs 1 ps: lost and paid for	4	0	0	17	By Samuel Anthony	300	0	0
	To Seersuckers 1 ps: Do:	6	10	0	24	By Ramnaut his Principall	1150	0	0
	To 2 Peeces Nehallewars	9	0	0		By Accot: Int: 7 mo: 19 das: at 1 r: 2 a: Per Cent Per mo:	94	3	3
	To Weavors Elatchaes	39	8	0		By Ramnaut his principall	2600	0	0
						By Accot Int: 4 mo: 27 das: at 1¼ rs: Per Cent Per mo:	159	3	9
						By Ramnaut his principall	1100	0	0
						By Accot: Int; 4 mo: 19 da: at 1¼ rs: Per Cent Per mo:	63	11	3
						By Samuel Anthony	600	0	0
						By Vuckeels, Muttsuddies, writers, and Taggadgeers, wages	99	13	0
							6492	15	3
						By Ballance	28906	10	2
	Rups:	35399	9	5		Rupees	35399	9	5

Fytch Nedham

Englezavad Diary Month June Anno 1682.

1 The remaines of Cash at the end of last mo: was Rs: 29006: 7: 2.

Came Letters from Poronia.

Mr Nedham, Mr. Bugden, and Samuel Pine (and Thomas Sterling whose wages is made 10 Rups: Per mo: to assist us in writeing) arrived from Cassumbuzar with 20000 Rups: taken up there, 10000 Rups: good Peet of Chittamun Saw at 1 r: Per Cent Per mo: the 19 day of May, and 10000 rs: peet more of Deepchund and Porunmull the 2d day of June at 1 r: Per Cent till paide.

10 Jeamshire beag the Maulda Crowry and Meira Syud Beag came to visit us.

12 The Dutch came from Maulda to visit us.

13 & 14 Punchanund Crowry and Rajaray Jimmedar of this place on false pretences and storyes has made great stirs and sent 10 Peons and privately hauled our Vuckeel from his house to Prison where they kept him a night and ½ a day till a ruff letter from us to the Crowry released him.

15 Wrote to Mr. Job Charnock &ca. about our troubles here and sent them George Stone in lyue of Samuel Pine who stayes here.

17 & 18 Sent Peons on Rajaray to take and bring him to us to make up Accotts: with us for brick and Stone who Shoffles of what he Can the Crowry now goeing with him to give up their Accounts for the past year at Muxoodavad to Boolchund: hindred our preos from medling with him promiseing on his returne which will be in 10 or 12 daies to see those Accots evened &ca.

19 Being invited to a feast by Jeamshire beage we went we found divers Pitans who with us was civilly treated. We have newes from Rajamaul that the Dutch has a Pherwanna come thither to clear their business and except we gett one alsoe nott one Saltpeetre boate or ought else will be passed that place

At a Consultation

Present

Tuesday 20 Mr. Fytche Nedham Cheife
Mr. Saml: Anthony

Mr. Edmund Bugden being at present here and desireous to travell higher in the Countrey towards Poronia and Hulldebarre we thincke it fitt to give him our Dustuck or passe thither and back and alsoe to request him on our Honorable Masters behalfe to enquire into and inspect their affairs at Poronia by calling our Gomosta to Accot: to see his Cash and what he has given out on Peetre and Turmerick and what he has gott and is likely to gett in this year and bring us as full an Accot: and that Countrey and the Commodities thereof as he can for we have nott English men suffitient to spare on such designes hence and we have great reasons to suspect uneaquall dealings by our

Gomostas there hitherto by their canting answers to our many letters sent them and complying with scarce anything ordered tho' they alwaies promise largely soe that we begin to dispare of doeing any thing there without an Englishman alsoe the Fouzdar or Governor of Huldebarree haveing divers times wrote to us very kindely desireing our Correspondence and to trade with us for Musk and other things that comes out of the Hill Countrey of Morung and those parts and to take English cloth in truck for them wherefore Mr. Bugden intending that tis agreed to send with him a small present for him of Cloth for a muster Vizt. 1½ yd : fine scarlett and 2½ yd : ordinary Broadcloth enough for a Pallankeen. alsoe 1 Sword blade and 1 Cristaline drincking glasse, and more 1 Sword blade for the Fouzdar of Poronia.

Fytche Nedham
Samuell Anthony

21 Mr. Edmund Bugden went hence towards Poronia.

22 Sent our Vuckeel to Jeamshirebeag to see what agreement could make with him for this year that our busines may nott be stoped if should nott have a Pherwanna to clear it from Dacca, who deferrd the dispute till tomorrow to day being Fryday their Holyday.

23 Sent our Vuckeel againe to Jeamshire beag who we finde is far from makeing any agreement of friendship with us demanding 500 Rups: Piscash yearly and the loan of 1000 Rups: to suffer us to trade, without makeing any agreement with us that when he sees best fishing he may play the Rogue with us as last year.

26 It being high time to give our Dadinee especially on culloured Goods, we sent our Vuckeel againe' to Jeamshirebeage to have his finall answer and to see if by any means an accommodation might be made between us soe that our businesse might nott be disturbed, ordering him to hint that if that could be he might expect something of Piscash from us to his content if he be nott very unreasonable; but in fine we Perceive noething will or can be done with him but from Dacca which we have still hopes though small that shall have remedy

thence at last; without which we shall finde certainely as many difficulties as last year on both sides the River, and to give out mony on Malda side before an agreement with the Governor is the ready way to make great remaines there againe for he will certainely hall good part of the mony received from us from them, and alsoe in our Jimmedars Country both striveing for the Chopp.

27 These last 18 or 20 daies we have had continuall Raines night and day soe that none of our Picars nor Weavors Could be made to appear to prize their remaines or make up any Accots: with us which has with the Cheifes indisposition of boddy and quarrells with our Governor hindred all business as well as the Ballance of our Boocks since the Cheife came up from Cussumbuzar.

Came letters from Cassumbuzar.

Sent letters to Rajamaul advising Mr. Prickman how to visit Budgeerook humeed Caune on his arrivall there which is said will be in 3 or 4 daies

Came letters from his Worship &ca. in Hugly with Invoyce of Broadcloth and Velvett Amot: to Rups: 312 in said Invoyce the Velvett in 5 yds: scant measure short Invoyced which we have likewise entred with the rest at 12 rs: Per yard.

We have newes from Bajeetpore that Ramkission Copperee the Silke Merchant at Cassumbuzar bought most of his white Silke at Bajeetpore and thereabouts and is yett bying what Yellow Silke can gett there which will hinder us from getting soe much as otherwise.

At a Consultation

Present

30 Mr. Fytch Nedham Cheife
Mr. Samuel Anthony

Buddeelidass haveing sent his Gomosta Govindram before him to talke with and agree with us for Daidine on Silke after divers disputes we agreed with him as follows Vizt: for 20 bailes Silke Tanne Puttunne June bund of 2 mds: or 80 Srs: to the baile the Seer to qt: * 70 Siccaes all is to be brought in within 3 mos:

---

* [*i.e.* contain].

from the date hereof and prized after the same forme and method as in Mr. Littleton's and the Cheifes time at Cassumbuzar by the Cheife and Councell and because the bund of this month being nott yett come out a muster cannott yett be made tis agreed to stand on both sides to a muster as we shall gett made in time by the English in Cassumbuzar alsoe according to Cassumbuzar custome to be sunned 1 day and weighed the next and 1 Sicca Rupee weight is to be allowed on each Seer in the Scale and the beam to stand in a leavill to hinder disputes that might otherwise come by the scale goeing downe; on said agreement is delivered him in hand 5000 Rupees which is 250 rs: Per baile and the rest to be paid when their Silke is prized, these bailes are to be of the 1st: 2d: 3d: 4th: 5th: and 6th Sorts as they come out in quantity in the winde and the scaines to be two Coveds long, and what Phoyne and Courser Sorts comes out he promises to bring in with the rest to be of one coved winde which we are to take and prize according to its worth he had 50 rs: on a baile more then usuall given him now being the first time to encourage him and because he had nothing on Phoyne, Durre, and Cuttcher, he shall bring in.

Fytch Nedham
Samuell Anthony.

ACCO: CURRTT: HUGLY.			*Dr.*	PER CONTRA.			*Cr.*
To Ballance	.. 137503	5	4	By Ballance last mo:	.. 137503	5	4

	Cash.	Dr.				Per Contra.	Cr.		
June—									
1	To Ballance last mo: ..	28906	10	2	16	By Samuel Anthony ..	500	0	0
	To Weavors Mulmuls ..	48	4	0	30	By Buddeelidas pd: Govindram on Tannee Silke	5000	0	0
6	To Chintamun Saw @ Int: @ 1 r: Per Cent taken 19 May Peet ..	10000	0	0		By Vuckeels, Muttsudies, and Taggadgeers, wages ..	104	12	0
	To Deepchund and Porunmul at Int: at 1 r: Per Cent Per mo: taken the 2d Currt: ..	10000	0	0			5604	12	0
						By Ballance ..	43350	2	2
		48954	14	2			48954	14	2

Fytch Nedham

Englezavad Diary Mo: July 1682.

1 Mr. Edmund Bugden arrived from Poronia this eavening returning us 1 Sword blade, and cloth and 1 glasse Sent to present Comall Cawne he being gon to the warrs four daies Journy thence and the other Sword blade he gave to Boola Cawne Fouzdar of Poronia.

At a Consultation

Present

Munda: the 3d. Mr. Fytch Nedham Cheife
Mr. Samuel Anthony

The Accot: of Cash being examined the remaines was found to be Rups: 43350 2 a: 2 p: and Passed. Prized Cossaes 612 ps: from Persaud Moodee

The 2 Delolls or broakers belonging to the Factory have formerly been allowed to take 1 Per Cent of the Weavors and Picars for Broakerage on all Dadinee or Imprest given out, as is Customary. but Since finding they have abused that liberty by takeing more Sometimes of Silly weavors therefore lately we have intertained one of said Delolls a Servant hopeing in time to shake of the other and doe our business onely by a Servant and the meane time tis agreed to take 1 Per Cent on all Imprest mony given out except on Errendies and its Yearne (which needs noe deloll to prize them) on Accot: Broakerage and put it to our Cash out of which the other Deloll may at convenient times be allowed somewhat in reason for his Service as he sall deserve, which we hope will be a Remmidy against their dealing with or abusing our weavors and Picars for the future.

Fytch Nedham
Samuell Anthony

4 Dispeeded this day a Dingee with Mangoes to Hugly for his Worship &ca. on which went a Generall to them at large of our affaires here and Duplicate of our Diaries from the end of November past to the end of May and different Single Coppies of our Aprill and May Diaries to be sent to the Fort.

At a Consultation

Present

Wensday the 4 Mr. Fytch Nedham Cheife
Mr. Samuel Anthony

Sunguttdass and Chundrabaune of Runsea being here we came to an Agreement with them Joyntly for 40: great Mds: Errendy Yearne at 80 Siccaes to the Seer and 1 Sicca Sallamme at the Scale Per Seer, at 12¾ a: Per Seer to be bought in as good as their last Years Muster on which this Agreement is made and it is to be brought in and prized in 3 months from this day on which is delivered him Rups: 950 and the rest is to be paid when the goods are brought in and Prized.

Jessoodanundun and Soodanund Allsoe agreed with to provide 500 Cossaes each to be 40 co: lo: and 2 wide according to the settled Guzz of this Factory and to qt:* 2015 threds in the Warp and to be eaven and square Struck as our Patterne at Rups: 9¾ Per peece to be all brought in and prized by the 20th of other on which is ordered to be delivered him Rupees 2000 in hand and the rest as soone as Can gett Monies, and none is to be taken under 8 rs: Price.

* [i.e. contain].

Fytch Nedham
Samuel Anthony

At a Consultation

Present

Thursday 6 Mr. Fytch Nedham Cheife
Mr. Samuel Anthony

Haveing many ways endeavoured an accommodation with Jimshire beag the Maulda Governor in vaine this eavening our vuckeel sped better then expected and brought a paper from Jeamshire beage being Chopped by him signifying his Agreement with us to lett us give out Dadinee unmolested and that he will onely take his Chopp of the Picars according to Tallica and help us in what he Can to doe our businesse here in our new House or Factory &ca. for which his favour we order or rather are forced to deliver him up his note for Rups: 500 taken up of us at the opening of our business with him in October last as a present and glad could gett our businesse done soe for the Year is far Spent and noe hopes left of any releife from our Friends at Dacca whence have expected a Pherwanna above 12 mos: in vaine to open our businesse which would have saved all our expence in Presents we have Since been at to keep our business goeing.

Fytch Nedham
Saml. Anthony

Mr. Bugden went hence for Cassumbuzar.

At a Consultation

Present

Satturday the 8 Mr. Fytch Nedham Cheife
Mr. Samuel Anthony

Came to an Agreement with Simbonaut Bramin for 50 great Mds: of 80 Siccaes to the Seer of Errendy yearne at 12¾ a: Per Seer and all other conditions is as with Sunguttdass and Chundrabaune for Do: Sort Goods the 4th Instant.

Likewise now we have agreed farther with Do: Simbodasse for 100 ps: Errendies to be 1¼ yard wide and 32 covetts or 16 Guzz of this Factory long in the Warp is to be 900 threds and they are to be eaven and square Struck soe that they may Come out thick and good at 3¼ rs: Per peece they are all to be brought in and Prized by the 15th October next and on those and the Yearne above mentioned is ordered to be delivered him Rups: 1918 12 a.

Fytch Nedham
Saml: Anthony

At a Consultation

Present

Munda: 10 Mr. Fytch Nedham Cheife
Mr. Samuel Anthony

Came to an Agreement with Jessoodanundun and Soodanund for 1500 ps: fine Cossaes at same termes as the 4th Currt: except that at 4 a: Per pce: is abated soe that Musters for these is at 9 rs: 8 a: which qts:* 2015 threds the [se] are to bee brought in and prized by the month of October next, none is to be taken under 8 rs: price on which is ordered to be delivered him Rups: 8000 and the rest as soone as shall be better in Cash.

Fytch Nedham
Samuell Anthony

Prized white cloth.

At a Consultation

Present

Tuesda; 11 Mr. Fytch Nedham Cheife
Mr. Samuel Anthony

Came to an Agreement with Jessoodanund and Soodanund for 500 ps: Errendies at the same rate as with Simbonaut the 8th Currant onely the time is different they being all to be brought by the end of October and prized, on which is ordered to be delivered them Rups: 1625:—

Fytch Nedham
Saml: Anthony

Prized white and Culloured goods.

This eavening we had newes that Jimshire beag the Malda Governor gave notice by beat of Drum through Malda that whosever of our Picars or Weavors &ca. did not forthwith repaire to us to make up their Accots: and bring in their Remaines should be Gonagar &ca. which at next meeting must thank him for, tho' the thing appears his proffitt as well as ours.

---

* [*i.e.* contain].

14 Sent letters to his Worship &ca. in Hugly with Coppy of our Agreement with Jeamshirebeage and our Diary for last mo : alsoe advised at large of Flying news we lately had from Muxoodavad that Rajaray our Jimmedar has gott or is promised a Pherwanna from Boolchund allowing him to take the Chop of what goods is made in his Country &ca. which if soe possible may cause some trouble in our businesse by two Governors striveing for it.

24 Rajaray came to us from Muxoodavad and tould us he had obtained the Pherwanna of Boolchund which he desired but did not shew it us now, soe doubt shall have Some trouble with him till Can gett a Pherwanna from Dacca to open our business which hope may be quickly.

Sent letters to Poronia ordering Rudermun our Gomosta to gett in what Saltpeetre and Turmerick he could and house it safely till should have orders to send it downe which can not well be till our businesse be opened.

At a Consultation

Present

Fryda the 28 Mr. Fytch Nedham Cheife
Mr. Samuel Anthony

After more then a mos : dispute with our Picars and weavors on new Dadinee upon our musters at length time alsoe growing Short they Came this day to an agreement with us for the following Goods on Musters Vizt :

Elatchaes 800 ps : 30 covts : long and 2 broad according to this Factory Guzz which is 3 fingers more then the true English yard which is put in for allowance of shrinking in makeing and cureing they are to be 27000 threds in the Warp, and the Wooffe &ca. is to be as Cleane and thick struck as the Muster for which they are to have 7 r : 4 a : Per pce : on which is ordered to be delivered to the severall Parties their proportion of mony according as their seve-

	Rs.	As.
rall notes for the quantity of ps: specifyed which in all Amots: to	5800	0
Charconnaes 2120 ps: to be 30 co: lo: and 2 co: broad according to the Companys Guzz of this Factory they are to be 1150 threds in the Warp and the Wooff to be as good and thick struck as the Muster for which they are to have 3 rs: 8 a: Per pce: which amots: to Rupees	7420	0
Chandenies 900 ps: 30 co: lo: and 2 co: broad Do. Guzz as above and they are to qt: 2400 threds in the Warp and the Woofe as good and thick struck as the Muster for which they are to have 6 rs: Per peece which is Rupees.. ..	5400	0
Seersuckers 500 ps: to be 30 co: lo: and 2 broad Do. Guzz as above and are to qt: 2300 threds in the Warp, and the Wooff as good and thick struck as muster for which they are to have 7 rs: Per ps: which Amots: to Rupees .	3300	0
Orungshyes 450 ps: to be 30 co: long and 2 broad Ditto Guzz as above, and are to qt: 1150 threds in the Warp. and the wooffe as good and square Struck as the Muster for which they are to have Rups: 4: 4 a: which is Rupees	1912	8
Nehallewars 1000 ps: to be 16 co: lo: and 2 co: broad of Do: Guzz as above they are to qt: in Warp 1130 Th: and the Wooffe is to be as good and as thick struck as the Muster for which they are too have 4 rs: 8 a: which is Rupees	4500	0
Mundeels 1000 ps: to be 36 co: lo: and 2 co: wide according to Do: Guzz and the Warp is to qt: 1000 threds and the Wooffe to be as good, well layed and thick struck as the Muster for which they are to have 9 rs: Per pce: which is in all Rups:	9000	0
Totall Amots: to Rupees ..	37532	8

this mony is to be paid them soe fast as Can gett it at Interest or otherwise, by a Supply from Hugly which hope will be quickly we haveing but small hopes of getting much more at Interest hereabouts; for the afforesaid Imprest or Dadinee every Party of weavors or little Picars give their notes of agreement a part speecifyed all at large and for what mony they receive in a booke on Purpose for that worke.

Came to an agreement with Simbonaut Bramin for 23 Bailes Silke Vizt:—

Tanne of long winde of 2 covetts as foll: Vizt:

Head, or first Sort	1	baile at 5 rs: Per Seer of 80 Sicc:
Belly ..	3	Do: at 5: 8 Per Do: Seer
Foot ..	4	Do: at 5: 4
fourth Sort ..	3	Do: at 5:
fifth Ditto ..	3	Do: at 4: 8
Sixth Ditto ..	3	Do: at 3: 12
	17	Bailes

Coarse Sorts Do: of 1 covt: winde as followes:

Pode ..	3	bas at 1 r: 6 a: Per Seer of 80 Sicc:
Cochall ..	3	Do at 10 a: Per Ditto Seer
	6	bailes

This Agreement is made on Muster of the Severall Sorts Silke mentioned which we doe keep by us to Prize and receive said goods by when comes in according to the settled Custome of Cassumbuzar it is all to be brought in and Prized by the 15th November next, and at the scale 1 tola or Sicca on each Seer is to be allowed for draught and the scale to be eaven, on which 6 first Sorts one with another is paid him in hand 200 rs: on each baile and on the Pode 45 rs: Per baile, and on 3 bailes Cochaul Rupees 65: which in all Amots: to Rups: 3600: and the rest is to be paid when the Silke is Prized and weighed off.

Mr. Samuel Anthony haveing brought in his Accounts of charges Generall for last mo: after perusall was passed as followes Vizt:

SAML: ANTHONY. *Dr.*	Rs.	As.	P.	PER CONTRA. *Cr.*	Rs.	As.	P.
June—							
1 To remaines last mo: ..	1614	8	10	By chas: generall..	226	15	0
To Cash ..	500	0	0	By chas: Cattle ..	24	11	15
				By Servt: wages ..	203	10	0
					455	4	15
				By Accot: Building	437	14	0
				By chas: Dyett ..	60	3	15
					953	6	10
				By remaines Vizt:— In cha: Merchandize Rs. 496 A 7 P. 18 In cha: Building .. 630 13 5 In Cash .. 33 12 11	1161	2	0
	2114	8	10		2114	8	10

A General letter being drawne up and approved was sent forward to the Worshipfull Matthias Vincent &ca. Councell in Hugly.

Our Accot: Currt: Hugly mentioned in our May and June Diary is not right because of Mr. Nedham's being twice called from the Factory for some time and haveing see small help besides our Seccond haveing been from us at the Mint all last year which occasioned the nott Ballanceing our Generall bookes till July therefore nothing Carried of from our Accot: Currt: which Caused the Difference which now is rectifyed according to our boocks as followes Vizt:

ACCOT: CURRT: HUGLY. *Dr.*				PER CONTRA. *Cr.*			
To Ballance now	131654	15	9	By Ballance end of Aprill last ..	131654	15	9

Fytch Nedham
Samuell Anthony

	Cash.	*Dr.*		
1	To Ballance last mo: ..	4335	2	3
	To Accot: Interest on 5000 rs: Dadinee 30th last mo: at 1¼ rs: Per Cent .	62	8	0
	To Accot: Batta on Do: at 1 Per Cent Sic:	50	0	0
	To Acco: Dustoore at 1 r: 9 a: Per Cent ..	78	2	0
	To Acco: Broakerage or Delolly at 1 Per Cent	50	0	0
4	To Sunguttdass and Chundrabaun	929	0	0
5	To 1 pce: Cossaes to Tho: Sterling ..	5	0	0
10	To Sook deeve Tundun ..	315	0	0
	To Pahlaud ..	269	9	0
	To weavors Mullmuls ..	7	0	0
	To weavors Mullmuls remaines	8433	5	0
	To Do; Reyngs Do: ..	1000	2	0
	To Do: Elatchaes	2210	0	0
	To Do: Chandneies	1000	1	0
	To Do: Orungshies	200	0	0
	To Do: Charconnaes ..	2000	0	0
	To Do: Mundeels	1400	0	0
	To Accot; Interest on 22067: 8 a: Dadenee this mo: at 1 r: 4 a: Per Cent	574	6	0
	To Acco: Batta on 16000 rs: Sicc: at 1 r: Per Cent on Dadnee do:	160	0	0
	To Acco: Dustoor on 52067 rs: 8 a: Dadnee at 1 r: 9 a: Per Cent ..	813	9	0
	To Acco: broakerage on 47574 Dadnee at 1 r: Per Cent Errendy and its yearne being excluded ..	475	12	0
	Rups: ..	63383	9	2

	Per Contra.	*Cr.*		
4	By Sunguttdass and Chundrabaune on Errendy thred ..	950	0	0
	By Jessoodanundun and Soodanund on Cossaes ..	2000	0	0
8	By Simbonaut on Errendies and its thred ..	1918	12	0
10	By Jessoodunundun and Soodunund on Cossaes ..	8000	0	0
11	By Do: on Errendies and its thred ..	1625	0	0
15	By Saml: Anthony on Generall exp:	540	0	0
25	By Ditto ..	400	0	0
	By Chintamun Saw his Principall	10000	0	0
	By Acco: Interest on Do: 2 mos: 6 das: at 1 r: Per Cent Per month ..	220	0	0
28	By Simbonaut on Raw Tanne Silke ..	3600	0	0
	By Raw Silke Tanne Musters 8½ Seer ..	20	9	9
	By Do: for 2 Musters fine 2 Seers	11	6	0
	By Do: for 1 Muster ordinary 1 Seer ..	5	0	0
	By Ramalls Silke and Cotten ⅓ of a peece a Muster ..	1	4	0
	By weavors Elatchaes ..	5414	12	0
	By Do: Seersuckers	3465	0	0
	By Do: Mundeels	8775	0	0
	By Do: Nehallewars	5400	0	0
	By Do: Charconnaes ..	6650	0	0
	By Do: Chandenies	3660	0	0
	By Do: Orungshies	1508	12	0
	By Vuckeels, Muttsudies, writers, and Taggadgeers wages ..	78	6	6
		63344	14	3
	By Ballance ..	38	10	11
	Rupees ..	63383	9	2

Fytch Nedham

Englezavad Diary Mo: *August* 1682.

1 This afternoone arrived a Generall from the Honorable William Hodges Esqr. ordering Mr. Fytch Nedham to deliver the charge of this Factory to the Second and in his absence to the Third and repaire to Hugly as soone as possible.

At a Consultation

Present

Fryda: the 4 Mr. Fytch Nedham Cheife
Mr. Samuel Anthony

The Accot: of Cash of the end of last mo: being examined was passed its Amot: being Rups:

Came to an Agreement with Jessoodanundun and Soodanund for 3400: ps: Errendies on the same termes as with Simbonaut the 8th past mo: onely the time is different these being to be brought in and prized by the 20th November; they farther agree alsoe to bring in at least 1000 ps: of these and the former within the mo: of October that they may be time enough here to Dye them blew according as we are ordered; on which is ordered to be delivered them Rups: 10000 as Can gett mony which hope will be this day, and the rest is also to be paid them when better In Cash. Came to an Agreement with Sookdeave Tundun for 500 ps: Silke and Cotten Ramauls at 3 rs: 12 as: Per pce: to be as good as the muster which qts: 575 threds in the Warp and the Wooff to be accord[ing] to the Warp; the Muster is 10 nailes or 16ths Square of this Factory Guzz; the peece is to qt: 30 Ramalls they are to be woven in half ps: of which 2 is to make 1 peece they are to be brought in and Prized by the mo: of October next on which is ordered to be delivered him Rups: 1875 as soone as Can possible.

Agreed farther with Jessoodanundun and Soodanund for 50 great Mds: Errendy Yearn of 80 Siccaes to the Seer at same termes as with Sunguttdasse and Chundrabaune the 4th past mo: onely some difference in the time these being to be brought in by the 20th November next on which is to be delivered him Rups: 1593: 12 a:

Came to an Agreement with Gunneshamdass for 37 bailes Silke Vizt:

Tanne of the long winde of 2 covts: as followes

Head or first Sorts	2 bas:	at 5 r: 12a:	Per Seer of 80 Siccaes
belly	5 Do:	at 5: 8:	Per Ditto Seer
Foot	5 Do:	at 5: 4:	Per Ditto Seer
4th Sort	6 Do:	at 5: –:	Per Ditto Seer
5th Sort	6 Do:	at 4: 10:	Per Ditto Seer
6th Sort	4 Do:	at 4: 2:	Per Ditto Seer
Do: worse	4 Do:	at 3: 8:	Per Ditto Seer
	32 Bailes		

Coarse Sorts Do: of 1 covett winde as followes:—

Pode	2 bas:	at 1 r: 7 a:	Per Seer of 80 Siccaes
Cochall	3 Do:	at –: 10 a:	Per Ditto Seer

This Agreement made on a Muster brought in by him which being somewhat better then the former we make some difference in the Price, the abovsaid Silke is all to be brought in and prized as usuall at Cassumbuzar by the 15th November next and at the scale is to be allowed 1 tola or Sicca on each Seer for draught and the scale to be eaven, on which 7 first Sorts is to be paid him as soone as Can one with another 200 rs: Per Baile of 2 Mds: and on the Pode Rupees 45 Per baile and on the Cochaul 20 rs: Per ba: which in all amots: to Rups: 6550: and the rest is to be paid when the Silke is prized and weighed off.

Fytch Nedham
Samuell Anthony

5 About 2 a Clock in the afternoone Tho: Sterling departed this Life with a very Strong feavor and great paine in his head, and in the eavening the Dutch unawars came to visitt us and hope to Carry him to his grave.

7 Taken up at Interest of Herderam Tewarre of Maulda 4000 Rups: at 1 r: 4 a: Interest Per Cent Per mo: till repaid Taken up more of Kissondas Saw Rups: 1800: at 1 r: 4 a: Interest Per Cent Per month till repaid.

Wrote the Honorable William Hodges &ca. Councell advising our want of mony and Mr. Nedham's goeing hence to Hugly.

At a Consultation

Present

Tuesda: the 8 Mr. Fytch Nedham Chief
Mr. Saml: Anthony

Came to an Agreement with Simbonaut for 500 ps: Cossaes of Orrua on our Muster of 9 rs: 8 a: the pce: they are to be brought in and prized by the end of October next alsoe agreed with him for 500 ps: Mulmulls on our third Muster at 9 rs: 8 a: which qts: 1400 threds to be brought in and prized bẏ the end of October next on which and the Cossaes is ordered to be delivered him Rups: 9500 as soone as Can gett mony which hope will be quickly else tis to be feared that he and others will be forced to relinquish their bargaines.

Mr. Nedham haveing delivered over all things belonging to the Honorable Company in this Factory to Samuel Anthony the remaines in Cash being Rups: 1547: 7 a: 11 p. it is agreed that with all possible speed he repair hence to Hugly according to order and in his absence Mr. Anthony endeavor to gett what mony at Intrest he Can, and agreed for as much more of what goods Remaines to be given out as he Can possible upon our musters whose prizes are all allready agreed on.

Fytch Nedham
Samuell Anthony

	CASH.			*Dr.*		PER CONTRA.			*Cr.*
1	To Ballance last mo: ..	38	10	11	7	By Raw Silke Tanne a muster 1 Seer ..	5	2	0
7	To Herderam Tewarre at Interest at 1¼ r: Per Cent Per mo:	4000	0	0	8	By Gunneshamdass on Silke Tanne	4000	0	0
	To Kissondass Saw @ Interest at 1 r: 4 a: Per Cent Per mo:	1800	0	0		By Sukdeeve Tundun on 500 Ramalls ..	1875	0	0
	To Sukdeeve Tundun his remaines ..	1375	0	0			5880	2	0
	To Accot: Interest on 5875 rs: dadnee @ 1¼ r: Per Cent ..	73	7	0		By Ballance delivered to Saml: Anthony ..	1547	7	11
	To Accot: Dustoore on Do: at 1: 9 as: Per Cent ..	81	12	0					
	To Accot: broakerage on do: at 1 r: Per Cent	58	18	0					
	Rupees ..	7427	9	11		Rupees ..	7427	9	11

Fytch Nedham

9 Taken up at Intrest of Gunneshamdas 2000 Rupees at 1 Per Cent till repaid.

10 Last night the Cheife proceeded toward Hugly.

Agreed with Weavors Ramauls for 200 ps: at the same termes with Sukedeve Tundun the 4th Currt: on which is delivered them in Part 200 Rups: the rest to be paid them as soone as mony Comes in.

11 Received Letters from Poronia.

12 This afternoone Ramdass one of Boolchunds Chubdars brought Coppy of a Dustuck from his Master to take 5 Per Cent of Hindoes 2½ Per Cent of Mahometants for all bought or sold by us.

13 Received Letters from Rajamaull desireing 7 or 8 mds: Lead to finish the Hugly and Cassumbuzar Silver.

14 This day the Chubdar came before the Dore makeing a noise that he would make a Kuttcherre before our Dore to take Custome of all that was brought in and out by Weavors &ca.

15 Sent a small Dingee with 8 mds: 5 sr: Lead to Mr. Prickman at Rajamaul.

16 The Chubdar Continuing still to make a noise at our Dore and setting People to clecr a place for a Kuttcherree it was agreed to send the Vuckeel to the Sheekedar who in the afternoone went where he had great argueing demanding of him a writeing for what goods we sold and prized last year and what Daudinee we had this year given out that they might take Custome of them accordingly to whome the Vuckeel gave this answer that we had nither given Dadinee nor sold any thing since we received the Dustuck and what was done before was according to licence given us by the Kings Phermaund.

17 This eavening Punchanund the Crowry of Gopaulpore arrived from Muxoodavad.

18 This day sent the Vuckeel to Punchanund where he had great disputes to give a writing and show our Accotts: of what we had bought and sold ever since this place was in Boolchunds Government and after a long time sent him to our Factory with a guard of 5 peons for to deliver the paper afforementioned which peons we gave faire words promiseing to send an answer the next day.

19 This day wrote to Punchanund telling him that we had severall Factories in Bengall and that it was never knowne that the English gave Accott: to the governors of what they bought and sold but that they traded freely according to the Kings Phermaund and that we had acted nothing since Boolchunds Dustuck came to us which he was nott pleased with butt sent more peons for the Vuckeel (whome we keep out of his Clutches) who continue at the Kuttcherre that Boolchunds Chupdar has made before our Dore of a Moodees old house.

22 The Chupdar continues still at the Kuttcherre before the Dore being pretty quiett but now begins to make a noise againe we thought convenient to stop his mouth for the present with 5 rs: till could gett our business remidied some other way.

Haveing agreed with Soodanund &ca. the 14th Currtt: for 3400 large peeces Errendies and 50 great mds: Do: Yearne which Amounts to Rups: 12643: 12 a: they now came desireing to have their mony or recant their bargaine the time of their agreement being far gone wherefore twas agreed for them to take up 1000 Rups: at Intrest where they could gett it and to allow them 1 Per Cent for it from the time they layd it out on Errendy and it's Yearne for the Company till could repay them againe.

23 Taken up at Intrest of Gunneshamdas 7600 Rups: at 1 Per Cent Per mo: till repaide.

Came to an agreement with Gunneshamdass for 400 ps: Cossaes and 800 ps: Mulmulls on the same Muster as with Simbonaut the 8th Currt: and to be brought in and prized by the end of October next for which is ordered to be delivered him 11400 Rupees.

26 This night appeared a Blazeing Star at West North West the brush of it was upwards about a covett long bending towards the Norward.

29 Taken up at Intrest of Tagoordas Bramin 2100 Rups: at 1 Per Cent Per mo: till repaide.

Simbonaut haveing agreed the 8th Currtt: for 500 ps: Cossaes & 500 ps: Mulmulls Came this day desireing to recant his bargaine haveing had no mony to goe on with the goods and the time growing so short to settle now wherefore twas agreed to lett [him] provide what quantityes he could which was 300 ps: Mulmulls at the same rates as formerly agreed on for which it was ordered to deliver him Rups: 2850 and to bring in the goods by end of October next.

	Cash.	Dr.		
9	To remaines delivered by Mr. Fytch Nedham	1547	7	11
	To Gunnesham at Int: at 1 Per Cent Per mo:	2000	0	0
10	To Accot: Int: on 17815 rs: Dadne at 1¼ Per Cent ..	222	11	0
14	To 1 ps: Orungshies used by Mr. Nedham ..	4	4	0
	To 1 ps: Seerbund used by Saml: Anthony ..	1	3	0
	To weavors Nehallewars on remaines ..	243	4	0
	To Do: Seersuckers on do: ..	102	2	0
	To Accot: Dustoor on 17815 rs: Dadne at 1 r: 9 a: Per Cent	278	5	9
	To Acco: brokerage on do: at 1 Per Cent ..	178	2	3
16	To 19 ps: Errendies used by Saml: Anthony ..	7	2	0
17	To Proffitt and Losse for what recd: of the Picars &ca for goods wanting in length and breadth ..	800	0	0
23	To Gunnesham his remaines ..	3229	10	9
	To Gunnesham at Int: at 1 Per Cent Per mo:	7600	0	0
29	To Tagoordas at Int: at 1 r: Per Cent Per mo:	2100	0	0
	To Simbonaut his remaines ..	584	2	0
	To 1 ps: Mulmulls lost by the Cundegurs and paid for ..	6	0	0
	Rupees ..	18904	6	8

	Per Contra.	Cr.		
9	By Gunnesham on Raw Tanne Silke ..	2550	0	0
10	By weavors Ramaulls ..	200	0	0
13	By Samuel Anthony ..	500	0	0
14	By weavors Charconnaes ..	350	0	0
	By Do: Chandenies	60	0	0
	By Do: Mundeels	225	0	0
	By Do: Elatchaes	145	0	0
	By Do: Seersuckers ..	35	0	0
23	By Gunnesham on 400 ps: Cossaes and 400 ps: Mulmulls ..	11400	0	0
29	By Simbonaut on 400 ps: Mulmulls ..	2850	0	0
	By household necessaries for 1 Copper Frying pan and dish pz: 2 sr: 7 ch: .	3	10	6
	By Vuckeels, Muttsuddies and Taggadgeers wages ..	69	2	0
		18387	12	6
31	By Ballance ..	516	10	2
	Rups: ..	18904	6	8

Saml: Anthony

Englezavad Diary Month September 1682.

1 The Ballance of last months Cash was 516 rs: 10 a: 2 pice.

8 The Cheife haveing promised Madeve Ray Jeamshirebeage Petesdust some broadcloth a long while agoe it was thought fitt to give him now 2½ yds: broadcloth that he might not hinder our businesse this year as he did the last.

Came letters with 7 chests Treasure amounting to 7860 li: 4 s: 5 d: from the Right Worshipfull Agent &ca. Councell in Hugly.

9 Sent a Generall to Rajamaul with Coppy of the Hugly Generall received last night desireing Mr. Prickman to come over and Consult what is best to be done with the Treasure and for carrying on this years Investment.

10 This day Mr. Prickman came from Rajamaule.

12 Taken up at Intrest of Soodanund 3000 Rups: at 1 r: 2 a: Per Cent Per mo: till repaid commenceing from the 26th August last.

13 Sent letters to the Right Worshipfull Agent &ca. Councell in Hugly adviseing of the receipt of 7 chests Treasure and of our Continued troubles here. Came letters from the Right Worshipfull Agent &ca. Councell in Hugly with Invoyce of the Treasure and list of goods to be provided this yeare.

14 Came the Invoyce of Treasure which arrived here the 8th Currt: with a Generall from the Right Worshipfull Agent &ca. Councell dated the 31st last month by way [of] Rajamaule.

At a Consultation

Present

Thursday 15 Mr. Jona: Prickman
Mr. Saml: Anthony

Mr. Jonathan Prickman being come over from Rajamaull according to the Right Worshipfull Agents &ca. order dated the 26th last mo: to endeavour to comply with the order as to the finishing the Imprest layd by Mr. Fytch Nedham &ca. and endeavour the disposeall of the treasure sent for Do: Accott: in order to which the Merchants with whome we deale with for goods and others from Maulda were called who nither would take Ryalls on Daudenie nor buy it for ready mony therefore it was judged best to be weighed of to the Companys Podars at Rajamaull and they to coyne it in the name of one of our merchants here it not being Judged Convenient to lett it be in the Englishes by reason of the late order come to the Mint Master (to take 2½ of the Mohometans and of the Hindoes 5 Per cent) he intending to take of us and the Dutch at the latter rate further tis thought best to remove all suspetion that merchant in whose name it is to be Coyned in write a letter to the Mint Master and that one ps: of Seersuckers and one ps: of Dooreaes be sent him (he haveing often desired it) and his favour for its speedy Coynage be desired.

It's alsoe thought convenient that the Podars if they Can meet with any mony in Rajamaul they take it up at Intrest (till our mony comes out of the Mint) and send it us with all speed that we may be doeing something.

Jona: Prickman
Saml: Anthony

15 In the eavening arrived Mr. Wm. Jolland and Mr. Thomas Hill the former for our assistance here the latter for advices in his proceedings at the Mint.

17 Mr. Thomas Hills advices drawne up and delivered him and he desired to repaire to his charge in Rajamaul alsoe with him went the Treasure belonging to our Factory in order to Coyning being nott able to dispose of itt.

18 Orders and Instructions for Mr. Thomas Hill for his proceedings in Rajamaul till orders from Hugly or Cassumbuzar.

Two boates of the Honorable Companys Treasure for Pattana being stopt at Rajamaul we earnestly recommend to your care the speedy clearing of them but if it be impossible we judge it most convenient to take it into the house there.

The Treasure you brought up from Cassumbuzar we thinck it most convenient you putt it into the Mint in the same Merchants name as our Maulda Treasure goes in nott knowing when any orders will come for it's remidy which is noe where procureable but at Dacca which possibly will take up much time by which the Honorable Company will be lyable to suffer for want of mony to finish this Years Investment and till then you are by noe means to enter your Treasure in the Companys name least you bring a Custome which will be very hard to alter if once paid 5 Per Cent.

There being in Rajamaule house severall mds: Lead and Silver mixt we thinck it best you make use of that for the refineing the silver since that is the Honourable Companys owne and cannott be made better use of then to their advantage.

We desire you would in all matters in the Durbar and in the Tanksaul give orders and advice to the Vuckeel and Podars that the Honourable Companys affaires may pass with all speed to their advantage which is all from.

Your very loveing Friends
Jona: Prickman
Saml: Anthony.

20 Dispeeded a Generall to the Right Worshipfull Agent &ca. with 2 pair off boocks belonging to this Factory the Bungala Duffter and a list of what goods ready in the House and what Contracts made by Mr. Nedham &ca. by boat.

21 Sent for the weavors whose goods are unprized to come to us to prize them but it being one of their festivalls they would nott come.

Wrote to our Gomosta at Poronia to make what hast with what goods he had ready for the Honorable Companys Accott: to send them downe before the waters are fallen.

Wrote to Mr. Job Charnock &ca. in Cassumbuzar advising that our Crowry Punchanund was repaireing to Muxoodavad and that the bailes of Silke soe long detained by the Crowry of Maulda were released.

22 Prized from severall Weavors and Picars 300 ps: of Mulmulls and ordered Do: Picars &ca. to be detained in the Factory till remaines paid by them.

23 Rajaray the Jimmedar belonging to this place came to our house desireing the Accot: of his bricks might be made up and his remaines paid him but with much a doe was perswaded to lett itt be referred till the cheife should arrive ending which disputes hindred the prizeing of goods.

Arrived Treasure from Rajamaul at Intrest.

24 About noone returned the peon (which was Sent with the Generall to the Cheife &ca. in Cassumbuzar adviseing of our troubles in these Parts) being cast away in ferring over the great River looseing Cloths Generall and all that he had.

The Cassumbuzar boates with Silke went hence.

25 Prized Mulmulls 270 ps: from severall picars according to their Goodness.

26 Prized Culloured and white goods 250 ps: being all that which the People that was present had.

Came a Generall from Cassumbuzar with Boolchunds Dustuck on the Maulda Crowry ordering him to release the two Silke boats.

27 Came in of the remaines of those Picars &ca. who are in Custody 93 ps: of goods and are in good hopes the rest will follow speedily.

28 Agreed with Simbonaut for 400 ps: Dooreacs and 200 ps: Cossaes the lengths and breadths to be as mentioned in the Honourable Companys list none to be less then 8 rs: Per peece which he acquaints us may be Procured for ready money wherefore ½ was paid him down which was 2750 rs: the rest to be paid him as soone as money Comes in.

29 Came a Generall from Mr. Thomas Hill at Rajamaul adviseing of the arrivall of the 31st of the Honourable Companys Petre boates there and that the Kings Muttsudies refused to cleare them therefore desired that Mr. Jona: Prickman would by all means Come over to use his endeavours for their release, which request was thought best to comply with in request of the weightyness of the affare and the waters falling very fast as alsoe now there being noe businesse Can be done here nither merchants nor picars will come to us for these 2 or 3 daies (in which time hope the Petre boates may be cleared) by reason of their great feast Called by them Dussarra.

In the eavening Mr. Jona: Prickman sett out for Rajamaul.

30 Arrived in Rajamaul forthwith enordered the Vuckeel to goe to Rajavally and sound his inclinations (that we may come to some agreement for the boates release) but found them excessive high.

In the eavening came a Generall from the Right Worshipfull Agent &ca. inclosed a most welcome Pherwanna from Hodje Zoffe Cawne ordering Rajub Alley nott to molest our businesse.

ACCOTT: CURRT: HUGLY. *Dr.*				PER CONTRA. *Cr.*			
To Ball: last mo:	137503	5	4	By Ball: last mo.	137503	5	4
				Augst: 31— By Sundry Accounts ..	70065	12	0
					207569	1	4

	CASH.		*Dr.*	
1	To remaines last month ..	516	10	2
	To Jessoodanundun and Soodanund at Int: at 1 r: 2 a: Per Cent Per mo: Commenceing from 26th August last	3000	0	0
22	To Ramnaut at Int: at 1 Per Cent Per mo:—Sicca .	4700	0	0
27	To Ramnaut at Int: at 1 Per Cent Per mo:—Peet.. ..	2025	0	0
	To Accot: Batta on 4700 rs: Sicca at 1 Per Cent ..	47	0	0
	To Accot: Int: on 8493 rs: Dadne at 1 r: 4 a: Per Cent ..	106	2	6
	To Accot: Dustoor on do: at 1 r: 9 a: Per Cent	132	11	3
	To Accot: brokerage on do: at 1 Per Cent ..	84	14	9
	Amotts: to Rupees ..	10612	6	8

	PER CONTRA.					*Cr.*	
1	By Jessoodanundun and Soodanund on Cossaes ..				3000	0	0
12	By Samuel Anthony ..				500	0	0
29	By Simbonaut on 400 ps: Dooreaes and 200 ps: Cossaes pd: in part ..				2750	0	0
	By weavors Chandenyes ..				1680	0	0
	By weavors Orungshyes ..				403	12	0
	By weavors Charconnaes ..				420	0	0
	By weavors Elatchaes ..				239	4	0
	By Vuckeels, Muttsuddies, and Taggadgeers wages ..				66	4	0
	By Accot: Sallary to this day paid to divers Vizt:—						
	Fytch Nedham the ½ of ½ a yeares Sallary from the 25 March past to this day at 40 li per an: is	88	14	3			
	Jona: Prickman at 20 li. Per an: ..	44	7	0			
	Saml: Anthony do: 20 li: Per an:	44	7	0			
	Tho: Hill ½ a years Sallary at 10 li. Per an: ..	44	7	0			
	Wm. Jolland at 10 li: Per an: ..	44	7	0			
	Saml: Pine Do. at 10 li. Per an: ..	44	7	0	311	1	3
30	By rosewater for 1 chest ..				30	0	0
					9400	5	3
	By Ballance ..				1212	1	5
	Amounts to Rups:				10612	6	8

Jona: Prickman

Englezavad Diary Month October 1682.

1 Carried the Pherwanna to Rajub Alley which after some quibles as talking of searching the boates &ca. he promised his Dustuck.

2 The Vuckeel brought the Dustuck in the eavening then being to late to open the boates were detained till the next morning as also that Ruffa Zemma Nabob on Shasta caunes side haveing been troublesome demanding some small matter which he Sayes belongs to him on Accott: of expences for his Punsvey.

3 Opened the Petre boates giveing Mr. Wood orders to make all hast possible and by noe means to goe the inward way but by way [of] Midradpore the waters falling mightyly; went with Mr. Hill to Rajub Alley desireing him on all occasions to assist him alsoe discoursed with him concerning the late order Come to the Mint Master and how unreasonabley he demanded Custome of us which he promised to advise to Dacca and gett it altered as alsoe did the Waccanevice which if accomplished will be of a Considerable advantage. In the eavening left Rajamaule.

4 Arrived at Englezavad this morning early. Ramchund and Jaddoo Picars brought in of their remaines 87 ps: of Mulmuls which come near to the Amount of their Accott: soe were released with orders to come with in a day or two to finish their Accounts. Generall boocks, Accot: Cash brought in by Mr Samuel Anthony were perused and passed.

5 Persaud Moody the Orrua Picar brought 119 ps: of Cossaes Account remaines

Prized Mulmulls from severall Picars according to their goodnesse 215 ps: being measured and chop'd were delivered the Washermen.

7 Prized white and Culloured goods 428 ps: which was then delivered the washermen. Packt up 10 chests of Cossaes qt: 1000 ps:

Wrote to our Gomosta at Batgetpore ordering him to make all hast with his goods as alsoe sent a small present to the Raja of those Parts Vizt: 3 yds: ordinary broadcloth, 1 Sword blade desireing him to be favourable to our Honourable Companys affaires which are in his Parts they being somewhat considerable as the Raw Silke Errendies &ca.

9 In the eavening went the boate with 10 chests Cossaes and our Diaryes for months August, September all which had been forwarded before but for fear of foule wether.

10 Prized white and Culloured goods and delivered them the washermen.

11 Chested white goods.

12 Being a Cloudy rainy day noething was done.

At a Consultation

Present

Fryday the 13 Mr. Jona: Prickman
Mr. Saml: Anthony

Budlydasses agreement made with Mr. Nedham &ca. (for Raw Silke as per Consultation dated the 30th June) being expired and as yett neither Silke nor merchants appears and we understanding that it is provided about Muxoodavad where Boolchund denies to releas it without paying of Custome first there which will prove a double charge nott knowing but that it may pay it againe in Hugly and charges hither and to Hugly must needs make it prove much dearer here then it can be prized at in Cassumbuzar therefore tis thought most to the Honourable Companys advantage that a letter be forthwith drawne up and sent to the Right Worshipfull Agent &ca. at Hugly desireing that we may have orders to send the Consultation and Dittoes agreement in Bungulla to Cassumbuzar and the cheife &ca. there to prize it, it being to be done as they prize their owne there of the same bund. Its agreed that the goods chested in the house be sent on board for Hugly this day the weather appearing faire.

Jonathan Prickman
Samuell Anthony

13 Sent a boate with 10 mds: 28 srs: lead to Rajamaul. Received a letter from Mr. Hill desireing 20 or 30 mds: more which was agreed to make up.

14 Prized Mulmuls &ca. from severall Picars.

15 The boate with 19 chests Mulmulls mentioned and agreed to be Sent in the Consultation dated the 13th Currt: went hence being stopped by the Jimmedar he refuseing to clear it out of his

Government till his Accots: of the bricks be paid him therefore it was agreed that we accompany it out par of his dominions which designe frustrated his intentions which appeared by his shamefull retreat at sight of our Flagge.

At a Consultation

Present

Munday the 16 Mr. Jona: Prickman
Mr. Saml· Anthony

Rajaray our Jimmedar haveing been very often with us to make up his Accounts of the bricks which we have used our uttmost endeavours to keep him off from by all the fair means and pretences we could at last he would noe wayes be sattisfyed but sett Peons upon our gate nott permitting any of our Muttsuddies to enter and threatning to stop our boates (which accordingly he intended to doe had nott we accompanied it part of the way with our owne boat) therefore to keep friendship with him (finding that the Maulda Governors begin to take the same way as they did the last year by detaining our Picars and nott permitting them to Come and make up their Accotts: upon every frivilous pretence the maine Actor in these affaires we understand is one Dowd Caune a Pattan Merchant who takes upon him to act in all affaires against us more then any Governor could there being none here to Controle him Jeamshire beage who is at present Crowry, Fouzdar, and all in those parts being Sworne brothers soe that there is noe body to complaine to) therefore it is judged fitt to keep the afforesaid Jimmedar our Friend that he may stand by us when occasion presents we lett him have 300 Rups: on Accot: of what owing him taken his noate as if it were lent him and he nott to molest us till the chiefe &ca. shall make up his Accounts which will come out near as much againe if not more.

Jonathan Prickman
Samuel Anthony

17 Simbonaut one of our Gomostaes haveing desired some ordinary broadcloth ,and 2 Sword blades to give the Governors in the Orungs it

was agreed to lett him have 4 yards, and 2 Sword blades, the former at 5 rs: Per yard, the latter at 2¼ rs: Per Sword.

18 Prized white and Culloured goods.

19 Sent a boat with mds: 20: 14½ Seers Lead and 10 mds: Salt to Rajamaule.

20 The Dutch Doctor haveing been very ready upon all occasions to come when he is Sent for night or day he being this day with us and proffering to buy 3 or 4 ps: of Elatchaes &ca. for his owne wareing Apparrell it was thought convenient to give him 4 ps: of Elatchaes, 1 ps: Seersuckers, 1 ps: Orungshyes.

21 Jeamshire beage beat his Drum throughout Maulda forbidding all Picars weavors &ca. to come near our house upon paine of forfiture of their whole Estates.

23 Drew a Mahozzer up of Jeamshire beags proceedings in order to send it to Dacca where we understand the Right Worshipfull Agent is gone, came letters from his Worship &ca. dated the 9th Currt:

24 The Cozze being Sent for to sighne the Mahozzer Came and accordingly performed his office and desired we would consider him and give him something to keep him warme wherefore one ps: of Charconna was given him. Came 5000 Rups: from the Mint

At a Consultation

Present

Wednesda 25 Mr. Jona: Prickman
Mr. Saml: Anthony

Mr. Nedham &ca. haveing contracted with severall of our Petty Picars that upon their remaines made by them the last year when they toock Dadenie on white goods they should bring in this year Culloured which they agreed to partly for fear that their remaines should imediately be demanded of them as appeares now by their Mulmulls &ca which they now in a nature force upon as aleadgeing that they were a prepareing with the mony they received of us the last year and that if we did nott either take them of for ready mony or Accot: of their remaines they should nither be able to bring in the Culloured goods nor pay us what they ow therefore in respect our Honourable Masters require a large quantity of Culloured goods it is agreed they be paid for what white goods they have ready and that a strickt watch be kept over then [that] they comply with their Agreement for the Elatchaes, &ca. this we beg may meet with a favourable representation it being partly against the Right Worshipfull Agent &ca. orders the prospect of the extremity the Honourable Companys affaires are falling into therefore are forced to use all manner of wayes to gett in our remaines the persons in Government useing all wayes to impeade it.

Account Charges Generall for mos: July, Augst: and September not being past by reason of the Cheifes absence was brought in by Mr. Samuell Anthony and perused and passed as followeth Viztt:

SAML: ANTHONY. *Dr.*

July—		rs.	a.	g.
1	To remaines last mo·	1161	2	0
15	To Cash	540	0	0
25	To Ditto	400	0	0
	Rupees ..	2101	2	0

PER CONTRA. *Cr.*

		rs:	a:		Rs.	An.	G.
31	By charges Generall ..	103	5				
	By charges Cattle ..	24	4				
	By Servants wages ..	178	1		305	10	0
	By charges Dyett ..				56	11	0
	By Accot: Building				273	5	0
					635	10	0
	By remaines Viztt:						
	In charges Merchandize ..	580	11	9			
	In Accot: Building	547	14	5			
	In charges Generall	71	3	0			
		1199	12	14			
	In Cash ..	265	11	6	1465	8	0
	Rupees ..				2101	2	0

						rs:	a.	g.			
August—											
1	To Remaines last mo :	1465	8	31	By charges Generall ..	82	10	0			
13	To Cash	500	0		By charges Catle	24	12	10			
					By Servants wages ..	184	8	0	291	14	10
					By charges Dyett ..				64	14	0
					By Accot: Building				409	7	10
									766	4	0
					By Packingstuff for 6 Corge Tentees at 7rs: Per Corge ..				42	0	0
					By charges Merchandize Vizt:						
					washing Nurding &ca. 130 Corge white goods at 1r: Per Corge ..	130	0	0			
					washing Nurding Cunding &ca. 9 Corge Culloured goods at 1r: 9a: Per Corge..	14	5	0			
					Scowring &ca. 5 Corge Mundeels at 10½a: Per Corge ..	3	4½	0	147	9	10
					By remaines Viztt:				955	13	10
					In charges Merchandize ..	469	14	13			
					In charges building	293	1	5			
					In charges Generall	121	0	0			
						883	15	10			
					In Cash..	125	10	12	1009	10	10
	Rupees ..	1965	8		Rups: ..				1965	8	0

					rs: a. g.	rs. a. g.
September—						
1	To remaines last mo:	1009 10 10	30	By charges Generall	65 14 10	
12	To Cash	500 0 0		By charges Cattle	24 11 0	
				By Servants Wages	174 6 10	
						265 0 0
				By charges Dyett		63 2 0
				By Accot: building		149 9 0
						477 11 0
				By remaines Vizt:	Rs. As G.	
				In cha: merchandize	557 5 18	
				In cha: building	300 1 5	
				In cha: Generall	50 2 10	
				In Cash	115 5 17	
						1031 15 10
	Rupees	1509 10 10		Rups:		1509 10 10

A Generall was wrote to Mr. Hill &ca. wherewith went the Invoyce an Accott. of the weight of our Tresure as weighed off to the Podars here with Invoyce of Lead sent.

Jonathan Prickman
Samuell Anthony

25 Came in 200 ps: of Mulmulls from Gunnesham paid Goosainedass and Suntoaes 366 rs: Account what white goods have been received of them and alsoe Simbonaut 750 rs: that was remaine dew to him Accot: the Cossaes and Dooreaes agreed for the 28th last month.

26 Came a Generall in the eavening superscribed to us from Mr. Jno: Beard &ca. in Hugly but upon opening found it was the Ballasore Generall which was agreed to be returned early in the morning by express.

27 Dispeeded in the morning early a Generall to Mr. John Beard &ca. in Hugly with the Ballasore Generall.

Wrote to our Gomosta at Poronia enordering him without faile to send away what goods he had ready of the Honourable Companys.

Ordered the Deloll to Sort Gunneshams 200 ps: of Mulmulls and what was judged to be lesse then 8 rs: Per peece to returne againe they being the first that have come in upon that Contract this is Cheifly to affright them but fear at last must be forced to take them itt being impossible for them to bring the weavors at once to Comply with their agreement they had been prized by us this day but that Do: merchant was taken sick.

28 Came a Generall from Mr. Thomas Hill with 1000 rs: with ½ a chest of Wine and one Barrell of Mum from the Right Worshipfull Agent &ca. desireing somethings for Presents which is agreed to be sent.

29 Came a Generall from Mr. Job Charnock &ca. adviseing that they had received advises from Hugly that our proposition made to the Right Worshipfull Agent &ca. (dated the 13th Currt: was approved off) concerning the prizeing of Budledasses Silke therefore desired we would send his agreement downe which was enordered to be transcribed as alsoe the Co[n]sultation and the agreement wrote in this Country language, all which we have agreed to nott withstanding we have had not yett advices from Hugly in respect of the shortnesse of time and supposeing they may in that Letter which was by a mistake rong superscribed to Ballasore as theires was to us

Paid of 1800 rs: at Intrest to Kissandas but could nott make them to allow Batta on the Siccaes saying it is nott Customary with them.

Agreed to pay off all as fast as money comes in from the Mint.

30 Wrote to Mr. Job Charnock &ca. and sent them Copy of the Consultation dated the 30th June and Budledasses agreement made with Mr. Nedham &ca. for Raw Silke in comeplyance to their desires in their Generall dated the 26th Currt: Sent a Generall to Mr. Thomas Hill with 2½ ps: broadcloth ordinary, 5 yds: Scarlett, 7½ yds: Velvett, 4 Sword blades, 11 ps: of Cristaline ware he being very desireous for things for Presents.

Sent orders to Sunguttdas and Chundrabaune at Batgettpore to send away the Errendies and Errendy Thread with all speed. In the eavening went a Generall to the Right Worshipfull

Agent &ca. with the Mahozzer on Jeamshire beage by water to Dacca.

31 Account Currant Hugly is as last month.

Jona : Prickman
Saml : Anthony

	CASH.			*Dr.*
1	To remaines last month ..	1212	1	5
	To 4 ps : Elatchaes spared to Severall ..	24	0	0
	To 1 ps : Mulmulls	10	0	0
	To 2 ps : Chandenies	10	0	0
	To 3 ps : Orungshies	9	0	0
	To 4 ps : Seersuckers	18	0	0
	To weavors Elatchaes ..	15	4	0
	To Seerbunds ..	4	12	0
	Toweavors Tanjeebs	29	8	0
	To Ramnaut At Int : at 1 Per Cent Per mo : ..	2000	0	0
12	To Gungaram and Samdas ..	192	0	0
24	To Sicca Rupees received from the Mint ..	4755	0	0
	To Peet Rups : received from Do :	245	0	0
28	To Sicca Rups : received from Do :	1000	0	0
	To Accott : Batta on 2946 rs : Sicca Dadenie at 1½ Per Cent ..	44	3	0
	To Accot : Dustoor on 3675 rs : Dadenie at 1 r : 9 a : Per Cent..	57	6	9
	To Accot : Int : on do : at 1¼ Per Cent ..	45	15	0
	To Accot : Brokerage on do : at 1 Per Cent ..	36	12	0
	Amotts : to Rupees	9708	14	2

	PER CONTRA.			*Cr.*
4	By Samuel Anthony	400	0	0
5	By weavors Ramauls.. ..	925	0	0
	By Simbonaut ..	2000	0	0
14	By Rajaray paid Accot : his bricks ..	300	0	0
24	By Simbonaut ..	750	0	0
	By Mulmulls ..	437	14	0
26	By Samuel Anthony to defray charges	400	0	0
	By do : on Acco : Packingstuff ..	300	0	0
29	By Kissondas Saw paid his Principall	1800	0	0
	By Accot : Int : on do : ..	61	10	0
31	By Vuckeels, Muttsuddies, and Taggadgeers, wages ..	71	4	0
		7445	12	0
	By Ballance ..	2263	2	2
	Amotts : to Rupees	9708	14	2

Jona : Prickman

Englezavad Diary Mo: November 1682.

Att a Consultation

Present

1 Mr. Jona: Prickman
Mr. Saml: Anthony

The Accot: Cash for last mo: being perused were passed the remaines being Rups: 2263: 2 a: 2 Pice.

Saml: Anthony

Dispeeded a Generall to the Right Worshipfull with our Diary for last month.

For these severall daies nothing could be acted as to prizeing and Sorting of goods by reason of pestalentiall feavour which rages soe violent among all our Servants, Merchants and Picars &ca. and throughout all the Countrey in these parts that there is nott one house without 3 or 4 sick people in it. The Almighty in his mercy put a Stop to it speedily.

2 Nursing Gwalltore one of our Picars haveing been detained severall daies for his remaines which is a bout 2000 rs: falling very sick was released with 2 peons to watch over him that he brings in his remaines (which pray God he performe) this way we fear must be forced to take with many more by reason of the sicknesse in these parts and if it shall please the Almighty to take any of them away the Honourable Companys remaines in their hands may prove dangerous debts but troubles may be worse if they should dey in our house.

3 Paid to severall weavors Mulmulls 309¼ rs: for what white goods have been received of them as according in our Consultation dated the last mo:

5 The Dutch Cellibrated their feast in joy of their new Generall made.

7 Mr. Richard Abraham Cape merchant of Mr. Richard Bugdens Shipp arrived here in order of sattisfying his Curiousity in seeing these parts.

8 Severall merchants that have any Goods in our house have for many daies been required to come and prize their goods but by reason of their Sickness could not make their appearance.

Came a Generall from Mr. John Beard with a Coppy of ours which went to Ballasore.

9 This morning arrived a Dutch boat from Dacca with 2 horsemen and an Ady from the Nabob to understand the quarrell between them and Jeamshirebeage.

Kinchund one of our Picars whose remaines are about 500 rs: being taken very sick of a suddaine was released for fear of his miscarrying in our Custody.

Came a Generall from Mr. Thomas Hill in Rajamaule with 5000 rs: Siccaes as alsoe a Generall from Mr. Job Charnock adviseing of the receipt of ours of the 30th past Buddelidasses Agreement.

10 Paid of at Interest 4000 rs: Herderam Tewarre.

11 Chested white goods.

13 Wrote to Mr. John Beard &ca. in Hugly.

Sent orders to our Badgeetpore Gomostaes to send away what goods they had ready.

Came letters from Poronia adviseing that those people with whome our former Gomosta had agreed with for Turmerrick at 4½ Per finding the price to rise fell from their Contract and made their Complaint to the People in Government there who put the businesse to an arbitration when it was Concluded on all sides they should allow 3¼ Md: therefore desired orders for his proceedings which we judged best to agree to time passing away and since it hath been ended by those Savage sort of People they will hardly be brought to alter it, (at least time enough to goe home by these Shipps) wherefore a letter is ordered to be drawne up and Sent him that, for as much as Can be provided and gott in within the limitts of this Mossoone he takes upon those termes (and the remainder to lett aloane to dispute for when more time presents) and to acquaint them it is onely taken up of them on Accot: of Hesob and that afterwards we expect the compleatment of their former agreement.

And tis further thought fitt that a Letter be wrote to the Fouzdar of those parts to informe him that this is nott our way of tradeing which if he permits once to be acted it will prove accustomary and then we may become great loosers if wee Continue tradeing in his Countries.

15 Prized 114 ps: white goods of Gunneshamdass.

Sent letters to the Right Worshipfull Agent &ca. Councell in Dacca.

16 Received Generall letters from the Right Worshipfull Agent &ca. in Dacca.

17 Received letters from Mr. John Beard &ca. Councell in Hugly.

Sent letters to Poronia ordering them to hasten their goods downe as soone as possibly they could.

19 This eavening Mr. Nedham arrived from Hugly.

20 Prized 163 ps: Mulmulls of Gunneshamdass.

21 Paid Gunnesham 1000: Rupees at Interest.

Sent letters to Rajamaule With 49 md: 20 sr: Lead and an Invoyce of do:

22 Came a Generall from Mr. Thomas Hill with 8000 Rupees.

24 Sent letters to Rajamaule with advice of the recept of 8000 rs.

26 Came a Generall from Rajamaule with 5000 Rups.

This eavening sent a Generall to Hugly with a Invoyce of 46 chests white goods amount to Rups: 28693: 8 a.

27 Sent a Generall to Rajamaule adviseing of receipt of 5000 Rupees.

28 Came a Generall from the Right Worshipfull Agent adviseing the receipt of the Mahozzer on Jeamshirebeage &ca. and of 2 Pherwannaes procured from the Nabob and Duan to clear our businesse

Att a Consultation

Present

29 Mr. Jona Prickman
Mr. Saml: Anthony

Rajaray comeing to our Factory to make up his Accots: of bricks earnestly desired they might be immediately done that he might have what is due to him wherefore it was agreed to lett him have 150 rs: and to forbear 10 or 15 daies longer till we had more leisure. Saml: Anthony haveing brought in his Accots: of the Generall boocks, Warehouse, and charges Generall for last mo: were perused and passed the latter is as followes Viztt:

Saml: Anthony. *Dr.*

October—				
1	To remaines last mo:	1031	15	10
4	To Cash	400	0	0
26	To Do:	700	0	0
		2131	15	10

Per Contra. *Cr.*

					Rs.	As.	P.
October—							
31	By cha: Generall	108	14	0			
	By cha: Cattle ..	25	4	0			
	By Servts: wages ..	120	5	5			
					254	7	5
	By cha: Dyett ..				69	15	10
	By Acco: Building				135	1	5
	By Packingstuff Vizt:						
	38 Corge Tentees at 7 rs: Per Corge..	266	0	0			
	5 Corge Guzzees at 11½ rs: Per Co:	57	8	0			
	10 mds: Cotton at 10 rs: Per md: ..	100	0	0			
	5 mds: wax at 24 rs: Per md: ..	96	0	0			
					519	8	0
	By Remaines Vizt:						
	In cha: Merchandize	686	13	3			
	In Accot: building	341	3	5			
	In Cash ..	124	15	2			
					1152	15	10
					2131	15	10

Mr. Nedham haveing licence from Hugly to come up and make up his Accots: here, upon pretence of which he severall times went to Maulda striveing to gett of the Honourable Companys Merchants and Picars what goods he could which will hinder them to bring in their full quantities agreed for wherefore twas thought convenient for the Honourable Companys Interest to keep what Merchants and Picars we finde he deals withall, upon our Doore untill he leaves this place or at least till he has done buying of goods in these parts that the Honourable Companys Investment may not be hindred by his irregular proceedings

Samuell Anthony.

30 Paide Jaggoordas his Principall being Rups: 2161: 8 a: Account Currant is as last month.

Saml: Anthony

	CASH.		*Dr.*		
1	To Ballance last mo: ..		2263	2	2
9	To Sicca rs: recd: from the Mint		5000	0	0
22	To Do: Siccaes ..	5000			
	Peett ..	3000			
		——	8000	0	0
26	To Do: Siccaes ..	1200			
	Peet ..	3000			
	Condarree ..	800			
		——	5000	0	0
29	To Accot: Batta on 2100 rs: Sicca Dadine at 1 r: Per Cent Per month ..		31	8	0
			20294	10	2

	PER CONTRA.	*Dr.*[1]	
1	By Mulmuls 30 ps: ..	185	12
	By Mundeels 11 ps: ..	83	4
	By Charconnaes 14 ps:	40	4
9	By Samuell Anthony	200	0
10	By Herderam Tewarre paid his Principall	4000	0
	By Accot: Int: on do: 3 mo: 3 da: at 1¼ Per Cent Per mo:	155	0
13	By Saml: Anthony ..	400	0
21	By Gunnesham paid in part his Principall	1000	0
	By Accot: Int: on do: 3 mo: 12 da: at 1 Per Cent Per mo:	34	0
26	By Saml: Anthony ..	400	0
28	By household necessaries for 1 large digche poiz 5¼ Seers.. ..	6	8
29	By Rajaray Acco: bricks ..	150	0
30	By Taggoordass paid his Principall ..	2100	0
	By Accot: Int: on do: 2 mo: 25 da: at 1 r: Per Cent Per mo ..	61	0
	By Muttsuddies, Vuckeels and Taggeers, wages ..	93	12
		8910	0
	By Ballance Rups: ..	11384	10
	Rupees ..	20294	10

Saml: Anthony

The businesse of this mo: was carried on by Mr. Jona: Prickman but nott being Coppied out ere his Decease was omitted to be signed by him.

Wm. Jolland
Saml: Pine.

A True Coppy of the Orriginall Transcribed and Examined Per me

SAML: PINE.

---

[1] The figures in the third column of this account, and some in the second, are bound in and are indecipherable.

GLOSSARY.

Adaty, adhotar, dhoti—a loin cloth.

Adolut, [Adollutt]. adālat—a court.

Ady. arzi—a petition. a writing.

Alatches, *see* Elatches.

Allollhesob—without account, money advanced in suspense account to be adjusted later on.

Ambus — Usually "Emmerties." from *amrati.*

Ameen, amīn—a commissioner deputed to collect revenue or to investigate and report.

Arindi, *see* Erindie.

Asswar, yasāwal—state messenger (silver stick).

Aul—an addition to a property.

Azzare, huzūri. Generally applied to lands of which the revenue was paid direct to the chief collector and not through the local collectors or zamindars.

Bafta—a kind of calico.

Banyan, baniya — a Hindu trader, a "middleman."

Batta, bhatta—exchange compensation, extra allowance.

Begaes. plur. bigha—In Bengal "the bigha contained only 1600 square yards, a little less than ⅓rd of an acre."

Booboo—bābu.

Budgero, bajrā—a state barge.

Burgunny, barhnī or barnī—a sum paid in advance to a cultivator or manufacturer.

Buxe, bak̲h̲si—a giver of employment or promotion, and so a paymaster.

Chandenees, chundenyes, plur. chāndnī—white drugget piece goods.

Charconnaes, plur. chārkhāna—chequered muslin piece-goods.

Chasni—scrapings.

Chaule, chāwal—rice seed, ⅛th of a ratti.

Chaup. chop, chhāp—a seal

Chaupa maul, chhāp Māl—sealing duty.

"Chaupt." "Chopt"—sealed.

Chauton, plur. chautai—cotton cloth piece-goods.

Checla, chakla — mixed silk and cotton fabric.

Chupdar, chobdar — a macebearer.

Chupper, chhappar — thatch, thatched-roof.

Chuttery, kachahrī—a courthouse.

Chyrurgion—surgeon.

Coffer, kaffir—a non-Muhammadan.

Coja, khwājah — merchant.

Colsa, khālisah — imperial treasury.

Congoy, kanungo — Kanun =

law: go = speaker. The Kanungo locally represented the State, as the patwari represented the cultivators in the revenue assessment.

Corconna, karkhāna—a place where work is done, workshop.

Corge — a score.

Cossaes, plur. From Arabic khāṣṣa = special, or from Persian khāsa = fine. Fine muslin piece-goods.

Cosseed—a running footman or messenger.

Course. koss — the distance the voice can carry, a measure of distance varying very considerably in different parts of India.

Covet, covid—an ell, cubit.

Cozzee, kazi—a Muhammadan judge.

Croury, krori—a revenue collector to the extent of a kror of dams; generally an overseer.

Cucherry. kachari — "cutcherry."

Cundegur. khandīgar —a worker in horn or ivory.

Cundy—calendaring cloth.

Cundy nurd—calendaring cloth in a roller-machine to smooth it.

Cutwull [Coutwall]. kotwāl—peace officer of the night, a magistrate.

Dadne [Dadine], dadnī—price of materials advanced to manufacturers.

Dandy, ḍānḍī—a boatman.

Deans, danes, delassa—an encouragement.

Delawn, dalan — a drying room.

Deloll. dallāl—a broker, an agent between the paikār and the purchaser of finished manufacture.

Dingee, dingī—a small boat or skiff.

Doorea. dareyā—striped cloth piece-goods.

Droga. dārōghā—an officer.

Duan, diwān—the head of the revenue department.

Dufftер. daftar—office.

Durbar. darbār—court.

Dussara, dasahara—Hindu festival.

Dustick. dastak—a pass.

Dustore. dastūr—custom allowance.

Elatches, plur. alatches—"Silk cloths with a navy pattern running lengthwise" [Temple].

Erindie,—arindī is the castor oil plant on which certain silk worms feed: hence the silk they spin is called arindī.

Essay, assay—test of purity of precious metal.

Ezarra, ijara—farm or lease.

Fousdar—Fauj = army: dar = holding. A military commander in charge of a district.

Gaum, gāoṇ—a village.

Gentoo, *see* Jentue.

Gomustah, gumas͟htah (usually gomasthar) — Derived from Persian verb Gumas͟htan 'to commission.' An agent on commission.

Gongar, gunagar—a criminal.

Gonnagarree, gunagārī—punishment by fine; penalty.

Gurriall, ghorawala—a groom.

Gurry—a fraction of a day, perhaps $\frac{1}{60}$th.

Guzz, gaz—a measure of length varying in different parts of India.

Guzzer gaut, gazar-ghat—washerman's landing-place.

Hesob, hisāb—an account.

Hummum, hammam—"apparently so named from its having been originally used at the birth, is a cloth of thick stout texture and generally worn as a wrapper in the cold season." (Taylor).

Hurry, hari—a sweeper; a village watchman.

Husball Hookum, hasbu'l-hukum—royal order.

Jagerdar, jagirdar—a holder of land by jagir or military tenure

Jentue—Usually written Gentoo (corruption of Portuguese *gentio*), a gentile or heathen. In early Anglo-Indian, a Hindu.

Jigdea, jizya—poll-tax imposed by Muhammadan rulers on their non-Muhammadan subjects.

Jimidar, jamêdār—native subordinate officer.

Jymindar, zamīndar—Lit. land-owner. It is needless here to go into the historic controversy whether the Zamīndar was an hereditary owner or held only as collector of revenue on behalf of the State.

Ketcherree, [Kedgeree] khichrī—rice cooked with butter and dāl and variously flavoured.

Kuttcherre, kachahri. Anglo-Indian "Cutcherry," a court-house.

Kuttorah, katra, *see* Introduction.

Lascar, lashkar—a military force, a guard.

Maul, mahāl—"Under the Muhammedan Government the term was also applied to a head of department of miscellaneous revenue derived from a tax on some particular things or persons." [H. H. Wilson].

Meirda, mīrdah—superintendent.

Mellick, malik—a proprietor.

Mochelke, muchalka—a bond.

Mohozzer, mahzar—a public attestation.

Mohur, gold muhar. "The Gold Mor, or Gold Roupie, is valued generally at 14 of Silver; and the Silver Roupie at two shillings and three pence." Ovington in 1690. [*Hobson-Jobson*].

Moode, mudī — grocer, tradesman.

Mosaib, musāhib—an aid-de-camp.

Mulmulls, plur. malmal—"a generic name for muslins of various degrees of quality." [Temple].

Mum—wax.

Mundeel, mandīl—a towel: loin-cloth.

Mungemull, manghī mal [?]—tax on boatmen.

Munscone—Monsoon.

Mussall, mash'alchi—lampman.

Mussheriefe, mushrif—accountant.

Muster—sample.

Mutsuddie. mutasaddī—clerk.

Muzzelt.—mash'alchī's room.

Nehalwar. nehālī—bed-cover.

Nerrick, nirkh—tariff, price current.

Neshaun, nishān—a rescript or patent granted by a prince of blood which if granted by the Emperor himself would have been called a farmān. Later a trade-mark.

Nurd—roller.

Orrua, orrut, ourrua—Corruption of arhat, agency, brokerage, commission, also warehouse. Dalāl of orrua = warehouse broker. Goods ready at orrua = goods ready at the warehouse.

Orung, arung, aurang—factory for piece-goods.

Orungshyes, Aurangshahis, aurangzebis—cloth piece-goods.

Outcryes—sales by auction.

Pachutrika—customhouse.

Pagoda—(1) a temple, (2) a coin worth in 1818 about 3½ rupees.

Palankeen—a litter or sedan. Palankeen chuttery = a movable tent, kachahrī.

Passari, pasāri—seller of drugs, spices, etc.

Pattella, patelā—a large flat-bottomed boat.

Peet, peth—current.

Petesdust, peshdast—assistant.

Phirmaund, farmān—imperial letters-patent.

Phirwana, parwāna—a written permit.

Phurd, fard—a written statement.

Picar, paikar—The paikār received an advance of money for purchase of materials and then entered into agreement with the weavers. See Taylor: *Sketch of Dacca*, pp. 186-8.

Piscash, peshkash—a thing present before some one, hence a gift or bribe to a superior.

Pistole—"The Spanish doubloon worth about £3—6s.—5d." Temple: II 304n.

Pitan, Pathān—an Afghan.

Podar, poddār—cash-keeper.

Punsewy, Punsvey [Paunchway], pansi—a light boat with covering of thatch or matting.

Purgona, parganah—a district comprising a number of villages.

Puttun, pattanī, patnī—goods manufactured to order.

Ramalls, rūmāls—Kerchiefs.

Rewanne, rawana—a passport, duty on goods in transit on the river.

Reyng.—"Rang is a muslin which resembles Jhuna in its transparent gauze or net-like texture It is made by passing a single thread of the warp through each division of the reed." [Taylor]

Riale, reald—pieces of eight.

Ruttee, ratti—measure of weight. 8 Ratti = 1 Māsha: 12 Māsha = 1 tola of 180 grams.

Sallame, salāmī—a complimentary present.

Scarlett—broad-cloth (the name of a cloth before the word was the name of a colour).

Seekdar, shikdār—a revenue officer.

Seerbund, sīrbandh—a turban.

Seerpaw, Saropā—dress of honour.

Seersuccecs—Sīr = head: sukh, pleasure. Turbans.

Siccaes, plur. Sikka rupee.

Sitternjee, shatranji—carpet made of cotton

Sozjies, plur. sūsī—silk cloth piece goods.

Subaes, subah's—the Nawab Nazim's.

Taffutiyes, plur. taffeta—thin glossy silk of plain texture.

Tagadgeer, tāgādāgīr—an overseer.

"Tageered"—Anglo-Indian, compelled, bullied.

Tallica, ta'likhah—invoice, list of goods.

Tanjeebs, tanzib—fine muslin piece-goods.

Tanksaul, taksāl—a mint.

Tannee, tānī—silk used for the warp.

Tola—a measure of weight.

Tuttenagg—Portuguese tutenaga, zinc or pewter. [Temple].

Vacquel, vuckeel vakīl—a legal agent.

Wacka Nevice, wāḳe 'ah navīs—a diary-writer.

NOTES.

Page 8. *The Crowry Jameshirebeag.* The Krorī Jam Sher Beg. An honorific title—"Lion in Warfare." On October 15th, 1683, Hedges writes: "I received a General Letter from Mr. Hervey &ca, Council at Maulda, complaining of the Government for protecting the Company's merchants and Drs. [debtors] from paying their just demands, and desiring a Perwanna may be procured from Decca, complaining of one Jamshier Beigh for demanding and exacting large annual Presents, vexing and ruining some of our servants, and if such a Perwanna, with an Assol or Messenger, cannot be procured, he shall not be able to send some $\frac{1}{10}$ part of this year's Investment, and that will come over 25 per cent or more above its due value; and presses to have the Perwanna, though it cost Rup. 5000." Yule: I. 128.

Page 9. *Wanges*—Reyns?

„ 10. *Troubles given us.* Sir R. C. Temple (II. 282) quotes the Hughli Diary, 31st October, 1679. "An answer to Mr. Vincent's Arzdass or letter to Hodgee Mahmud, the Princes Devan [received] this day, wherein it was ordered that the Aidee and Allee Nucky, the Princes Governour here, should take the 15,000 Rs., and, if could not perswade him to give him any profitt thereon, not to use any force to stop the English trade."

Page 10. *Seerpore.* Sherpur Murcha, a place of great historical interest in the Bogra district. See the interesting account of the place given by Mr. J. N. Gupta, M.A., I.C.S., in his volume on Bogra in the *District Gazetteer of East Bengal and Assam*, Allahabad, 1910.

Page 22. *The Nishaun of Shasuja, Prince of Bengal* Sultān Shujā, second son of the Emperor Shāh Jahān, Governor of Bengal, 1639-58. For the text of the *nishan* see Temple: II. 21 *et seq.* It is dated April, 1656. . See Art. "Gabriel Boughton and the Grant of Trading Privileges to the English in Bengal" by Wm. Foster, C.I.E., in the *Indian Antiquary*. Vol. XL, September, 1912. Firminger: Introduction to the *Fifth Report*, p. liv.

Page 38. *Hernarraine Ray.* I take it that the Hernaraine Ray of the Malda Diary is the same person as Rāi Nanda Lāl of Hedges' Diary.

Page 40. *Tittillia.* Perhaps the Titaly of Rennell's map, almost due east of Malda, on the road to Dinajpur.

Page 41. *Jeram.* Jāiram Malik.

„ 44. *Maypore.* Mahipore.

Page 44. *Kybert.* Kaibartagram, village in *mauza* Kaibartagram, *thana* Porsha, district Dinajpur. See Gupta: "Bogra," pp. 40-1.

Page 44. *Gualla.* Goula, village in *mauza* Goula, thana Porsha, P. O. Nithpur, district Dinajpur. "The Milkmen's Village."

Page 49. *Gera Gaut.* Ghorāghat. "A town and zemindary in the province of Bengal, district of Dinagepoor [Dinajpur], ninety miles N.E. from Moorshedabad [Murshidabad]; lat. 25° 13′ N., lon. 89° 10′ E. This Zemindary, which in 1784 contained 632 square miles, in A.D. 1582 is described by Abul Fazel as producing raw silk, gunnies (sack-cloth), and plenty of Tanyan horses. At an early period after the Mahomedan invasion it appears along with several others in this quarter, to have been bestowed on different Afghan chiefs, who colonized in them, and received accessions of their countrymen from abroad. Being zealous converters of the Hindoos, and not very scrupulous as to the means, a very large proportion of the inhabitants to this day profess the Mahomedan religion, and dignify themselves with the Arabian title of Sheik. In process of time the Ghoraghaut Zemindary was seized on by the Kakesheian tribe of the Moguls, but for many years past it has reverted to its present owners, the Hindoos. From the traces of ruins still visible the town of Ghoraghaut appears to have covered a great space; but it is now almost restored to the condition in which it probably existed before the Mussulmaun conquest being buried in woods and jungles, with tigers prowling about the streets The most remarkable monument is the tomb of Ismael Ghazi Khan (a holy man and good officer who first subdued this tract), which is much feared and respected both by Hindoos and Mahomedans; and although nearly ruinous, has still a small canopy hung over it" Hamilton: *East India Gazetteer*, 1828. See Gupta: "Bogra" (*District Gazetteers of Eastern Bengal and Assam*), p. 33. Stewart: *History of Bengal*, pp. 161, 168, 178.

Page 49. *John Griffith.* "A soldyer of the Agent's guard, a throwster by trade" Temple: II. 321.

Page 50. *Mr Sowdon.* Elected writer, 24th October, 1677. At Dacca 1679. Brother-in-law of John Beard. See Temple: II 271. Yule: I. 93.

Page 50. *Englishes grievous disgraces.* See Stewart: *History of Bengal*, p. 310.

Page 50. *Hodge Zuffe Caun.* Hājī Safī Khān. The Emperor's Dīwān at Dacca. Replaced by Amīr Sayyīd Khān in December, 1682.

Page 52. *The Jydgea begins to be taken very strictly at Rajamaull. Jajia*, poll-tax on non-Moslem subjects. See Stewart: *History of Bengal*, p. 308. Temple: II. 276. Wilson

(*Early Annals*, vol. i, p. 241) mentions a farman of Aurangzēb, dated 1680 "for freeing the English from the *Tridgia* (*sic*) or Toll Tax (*sic*) in Bengall."

Page 54. *Hurrypore*. Haripur.

Page 57. *Nabob Spindar Chaan*. Asfandiyar Khān. Buchanan Hamilton (*Eastern India*, vol. iii, p. 48), gives a list of the Nawābs or Faujdars of Purnea. The first four on this list are:—

Ostwār Khan. [Istwār Khān ?]
Abdullah Khan.
Asfandiyar Khan.
Babhaniyar Khan.

Page 61. *John Ellis*. Francis Ellis ? See Yule: I. 110 *et seq.*

Page 62. *John Elliott*. See Yule : I., 110 *et seq.*

Page 76. *Bajitpore*. "Bazetpore is about eighteen miles distant from Junglebaree; and like it, now forms a part of the district of of Mymensing. The cotton raised in the vicinity of these places is of a superior quality ; and both stations have long been celebrated for the manufacture of some of the finest muslins exported from Dacca." Taylor: *Cotton Manufacture of Dacca*, p. 9. "In former times the muslins of Kisoriganj and Bajitpore were of considerable note, and the East India Company had factories at these places. The Kisoriganj factory is now the warehouse of a cloth merchant, and a police station stands on the site of that at Bazitpore." Hunter: *Statistical Account*, vol. v, p. 459.

Page 77. *Nurdys*. "Noordeahs arrange the threads of cloths that happen to be displaced during bleaching. They work in the manner shewn in the figure. The cloth wound upon a roller (*nurd*) is placed between two posts on the bleaching ground, and is unrolled and carefully examined. The damaged portion of it is then stretched out, and, being wetted with water, an instrument like a comb formed of the spines of the nagphunee plant (*cactus indicus*) is drawn lightly along the surface of the displaced threads in order to bring them into their proper places." Taylor : *Cotton Manufacture of Dacca*, pp. 96-7.

Page 77. *Clement Du Jardin*. Purser of the *Sancta Cruz* in 1676, afterwards a "freeman" at Fort St. George. For his later career and death on board the *Berkeley Castle* on 12th February, 1687, see Temple : II. 389*n*.

Page 78. *Mittigae*. Mitigate.

Page 79. *Pirzadda*. Pīrjāda, *lit.* the son or disciple of a Mahomedan spiritual guide. Applied technically to a holy man attached to a mosque.

Page 81. *Worshipfull Matthias Vincent*. Vincent had become Chief in "the Bay" on the death of Walter Clavell in August 1677. He held office till Hedges' arrival in 1682. Wilson : *Early Annals*, vol. i, pp. 72-73.

Page 81. *Mucdumpore.* Makhdāmpur perhaps preserves the memory of Makhdām Akhī Sirāj-ud-dīn. See Ravenshaw · *Gaur: its Ruins and Inscriptions*, London, 1878, p. 8. On the 13th December 1779, Streynsham Master and his Council at Hughli had ordered "in building the house at Maulda directions be given to make choice of an open place and high ground, well seituated upon or near the river, and to build all of brick." Temple · II. 48.

Page 82 *Cundegur.* "Koondegurs are workmen who beette cloth Muslins are beaten with small chank shells (*voluta gravis;* Lin.), and cloths of a stout texture with a mallet upon a block of tamarind wood, rice water being sprinkled over them during the operation." Taylor: *Cotton Manufacture of Dacca*, p. 97.

Page 90. *Buttedah Gopolpore purgona* A village on an island in the Bhatia lake in the neighbourhood of Gaur.

Page 94. *Mir Jafar.* See Yule: I. 42. "October 26th. This afternoon young Prince of Ye. Blood, Meerza Mazuffer Chan, whose mother and Orang Zeb (ye. great Mogull's) were both sisters, and sisters to Ye present Nabob Shah (Estah) Chan [Shāistāh Khān] of this place [i.e. Dacca]. came to give me a visit, and was entertained by me above two hours"

Page 92. *Droga of the Shar.* Darogha of the Shāh. Overseer of the port—probably Dacca.

Page 95 *The Kuttorah was burned.* See Introduction.
 . 96 *Copy of Assut Caun's Perwanna* See Note to page 106 below.
 .. ., *Cojee of Asmeer*—the Kazi of Ajmīr.

Page 96. *Sydulapore.* Sa'adu'llāhpur. "Throughout the period of Muhammadan rule in Gaur this spot alone was left to the Hindu population for the performance of their sacred rites, and here all the dead were burnt. The sacred ghāt still exists on the banks of the stream, and thousands annually attend to celebrate their worship of the local deity. Just above the bank is a beautiful grove of very old trees, which afford a grateful and refreshing shade to the pilgrims. From this point commenced the outer rampart of the city, running east from the stream." J. H. Ravenshaw: *Gaur · its Ruins and Inscriptions*, London, 1878, p. 12. For Buchanan Hamilton's remarks see Montgomery Martin: *Eastern India*, vol. iii, p. 67.

Page 98. *Taggeered.* Anglo-Indian. "Jockey'd out."
 .. 98. *Mis: Story.* See Temple: II. 350. "David Story promised to comply with his bond last yeare and to bring his wife up to Madrass by some ship this yeare."

Page 107. *Hodgee Zoffe Cauns Perwanna.* Hājī Safi Khān's *parwana.* See "A list of Government Papers" given in Wilson's *Early Annals*, vol. 1, p. 241.

"6. Copie of Hedges Sophy Cawn Duan of Bengall, his Phirwanna for a free trade in the 21st year of Aurengzeeb's reign, procured by Sir Matthias Vincent 1678."

Hedges writes in 1682: "December 3rd. I went to visit ye. new Duan, after I had shewen all our old Phirmanns and Perwannas in our favour for a free trade without payment of Custome, he told me these were once of value but now signified nothing. The King having ordered that, if the Custome were not paid at Surat, it should be paid here, excepting ye. respite given us of 7 months for ye. procuring ye. King's Phirman to the contrary. At present he confirmed the Nabob's (Haggi Sophi Chan's) Perwanna by his Chop, that no customs should be demanded for money, save at ye. Mint, and that but 3½ per cent." Yule: I. 53.

Page 107. *Sultan Auzzums Neshaun* Sultān Muhammad Azam's Nishān. See the last mentioned and preceding note.

"4. Copie of Sultan Azzum Tarras Nishaun for a free trade in Bengall, procured by Sir Matthias Vincent, 1678."

Sultan Muhammad A'zam was the third son of the Emperor Aurangzēb. He arrived at Dacca on June 8th, 1678.

Page 107. *Shasteh Cauns Perwanna.* Shaistāh Khān, maternal uncle of Aurangzēb, Nawab of Bengal, in succession to Mīr Jumla, 1663. Re-appointed, 1677. Resigned, 1689. For the text of his parwana, see Temple: II. 22-24; Wilson: *Early Annals*, vol. I, p. 241.

Page 107. *Assut Cauns Perwanna.* See Temple: II 292 298, for the Dīwān Asad Khān's offer (1679) to procure a farmān for trade custom free. See Wilson: *Early Annals*, vol. I, p. 241.

Page 110. *Hernaraine Congoy of Bengal.* Rāi Nanda Lāl, Kanungo of Bengal. The name is given by Streynsham Master "Raynund deloll" (Temple: II, p. 73) and also "Raynundellol" (II. 57). Hedges gives the name "Ray Nundelall," and calls him "Yr. Nabob's Vizier." For Hedges' dealings with him see Yule: I. 42-50. His death and cremation, Yule: I. 87. If his office was that of dīwān, he was the Nawab's Dīwān, the Emperor's Diwan being in 1681-2 Hājī Safī Khān.

Page 110. *Toarra and not of Sherra.* Tōrāh, the Hebrew, hence Biblical, law. Sharā, the precepts of Muhammadan law.

Page 121. *Boolchund:* Bāl Chand Rāi. Faujdar at Murshidābād. See notices in Temple and Yule. Died, 1683.

Page 134. *Mr. Charnock.* Job Charnock (entered the Company's service in 1658) served at Patna from 1659 to 1680. Chief at Kasimbazar, 1680-1682.

Page 134. *James Price.* Formerly servant to Surgeon Gabriel Boughton. See Temple: I. 416*n.* Numerous references in Yule.

Page 146. *Samuel Hervy.* For biographical details see Temple. Chief of Dacca, 1677. Died at Malda on 13th March, 1684. For his appointment to Malda, see Yule: I. 72-73.

Page 149. *Muxoodavad.* Maksūddābād, renamed by Murshid Kulī Kan, Murshidabad.

Page 149. *Tanda.* About the year 1565, Sulaiman Shāh Karani moved the capital from Gaur to Tandāh. The site of Tandāh cannot now be ascertained exactly, the remains of the old capital having been washed away by the Pāglā river.

Page 153. Haldybary. See Hamilton: *The East India Gazetteer*, 1828. "Haldubary.—A town in the province of Bengal, district of Purneah, situated on the east side of the Mahananda river, fifty-five miles N.E.. from the town of Purneah; lat. 26° 20′N., lon. 87° 59′E. The pergunnah, or rather estate, in which Halderbary (*sic*) stands, is one of the largest in the Purneah district, containing about half a million of acres, besides a portion of Dinagepoor. During the reign of Acber it was but a small territory, the greater part of which belonged to the Bhooteas of Sikkim, and being overspread with jungle, was much frequented by thieves. In this condition it remained until Seid Khan, a stranger, drove the Bhooteas to the mountains, and erected a fortress at Haldubary." Rennell spells the name Haldibary. See Hunter: *Statistical Account of Bengal*, vol. xx. p. 230.

Page 168. *Dutch Derictore.* The Director of the Dutch Factories.

Page 173. *Edmund Bugden.* For biographical details see Temple: II. 349*n.* Bugden had been dismissed, and in 1680 ordered to live under the Government at Fort St. George. The mention of him at Malda is an addition to the information supplied by Sir R. C. Temple.

Page 173. *Samuel Pine.* Sent to succeed Thomas Hill at Rājmahal. Yule, I, 110. See *Ibid.* I. 179.

Page 174. *George Stone.* See Yule: I. pp. 80-90.

Page 176. *Budgeerook Humeed Caune.* Buzurg Umed Khān. Son of the Nawab Shāistah Khān.

Page 187. *The Honorable William Hodges, Esqr.* William Hedges (afterwards knighted) arrived as agent in the Bay, and independent of Madras, at Balasor in July, 1682.

Page 192. *Blazeing Star.* Halley's Comet appeared in August, 1682. The Great Comet, which appears every 575 years, had appeared in 1680-1. (Information supplied by the Rev. A. C. Ridsdale).

Page 194. *A generalle*, a public letter signed by the Chief and his colleagues.

Page 195. *William Jolland*. See Temple: II. 344*n*.

„ 195. *Thomas Hill* Died at Rājmahāl on August 31st, 1683. Yule: 1. 108.

Page 200. *Midradpore on the way to Razmehal.* This appears to be Mirdadpur, a village in Mauza Kismat Badh Mirdadpur, thana Manihari, P. O. Marishai, district Purnea. There is a Mirzadpur in mauza Mirzadpur, thana Balarampur, P. O. Balarampur in district Purnea. Buchanan (Montgomery Martin. *Eastern India*, vol. iii, p. 22) has: "The Kalindi is not wide, but is very deep, and a very considerable trade is carried on at Gorguribah and the adjacent markets which I consider as forming one town. A little below this a branch of the Ganges called Gunga Pagla or Burhi Ganga has swept away a part of the Kalindi. The remainder separates from this branch of the Ganges about three miles from Gorguribah, and runs with a very wandering course for about 17 miles to join the Mahananda opposite Malda. In the way it has a communication by two small creeks with the west branch of the Mahananda and with the Chhota Bhagirathi. On the part of its course is a considerable mart named Mirzadpoor to which boats of any size can pass till November. but in that month the navigation usually ceases, although part of the channel is still very wide." Rennell has "Madrapur," which may be either Mirdadpur or Mirzadpur, both places being close together.

Page 206. *Mr. Jno. Beard* came out to India with Hedges, whom after President Gyfford's visit to Bengal, he succeeded as Agent in the Bay, but subordinate to Madras. Died at Hughli on 28th August 1685.

INDEX.

(*N.B.*—**An asterisk denotes that the word is explained in the Glossary**).

Abdulla Khān, *Nawāb of Purnea*, 157, 221.

Abid Ali Khān, 1 (footnote).

Abul Fazl, *Alami*, 220

Account of salary, 26.

Accounts, directions *re* keeping of, 12 *et seq.*

—— of merchants to be adjusted annually, 30.

—— penalty for not passing, 24.

**Adalat*, 110.

**Adaty*, 10.

Address in correspondence, directions regarding, 21.

Admonishment, 32.

*Adollut, *see Adalat*

Adultery, 33.

Afghan merchants, 74, 111, 124, 127, 142.

Afghans, 174.

—— quarrel with the Dutch, 168.

Agra, 2.

Ajmīr, *Kazi* of, 96, 222.

Akbar, *Emperor of Hindustan*, 224.

Akbarnagar, 2 (footnote).

Alamchand, *Shikdar of Gopalpur*, 90, 109, 111, 137.

*Alatcha, 9, 54, 68, 99, 126, 133, 170, 173, 182, 199.

'Ali Naki, 10, 219.

Aliverdi, 104-5, 108-9, 111, 113, 124, 128, 131, 153.

Allabardy, *see* Aliverdi.

Alle Nucky, *see* 'Ali Nakī.

Allumchund, *see* 'Alamchand.

**Amin*, 158.

Anne (ship), 125.

Anstey, Lavinia Maria, 6.

Anthony, Samuel, 98-104, 107-9, 111-16, 118, 119, 121-26, 128-34, 136-43, 145-51, 153, 155-56, 158, 160-63, 165, 167, 169-73, 175-82, 184-89, 193-96, 199-203, 206, 208-9, 211-13.

—— arrives at Malda, 98.

—— dies, 6.

Arhat, 54, 63.

**Arindi* cloth, 53, 54, 133, 179-80, 187, 192, 207.

Armenian, 100.

Arrow shot into the factory, 68.

Asad Beg, *Mir*, 77, 128-29, 143, 156, 173.

Asad Khan, *Diwan*, his *parwana*, 96, 107, 223.

Asfandīyar Khān, *Nawab of Purnea*, 57, 60, 65, 71, 107, 113, 221.

Asmeer, *see* Ajmīr.

Assay, 77, 80, 118, 120.

Assaymaster, 127.

Assut Caun, *see* Asad Khān.

*Asswar, 164.

Atmaram, 103, 108.

Aurang, 106, 115, 122, 202.

Aurangshahi, 9, 56, 62, 64, 81, 126, 133, 170, 183, 199.

Aurangzib, *Emperor of Hindustan*, 5, 221, 223.

*Azzarre, *see Ijara.*

Babhaniyar Khan. *Nawab of Purnea*, 221.

Babu Ray, "our vaqueell" at Malda, 10, 56, 57, 60.

Badgeetpore, *see* Bajitpur.

Badridas, 176, 178, 201, 207, 210.

**Bafta*, 3.

Bajitpur, 76, 176, 200, 207, 210, 221.

Balasore, 4, 22, 26, 29, 30, 206, 224.

—— Roads, 125.

Bal Chand Rāi, 121. 127, 131, 133-34, 136, 140, 151, 157-58, 161. 163-67, 174, 190, 201.

——, his *dastak*, 131.

Banarsedas, *see* Benarasidas.

Baneshwar Das, *mutasaddi*, dismissed, 55.

**Banian*, 30.

Banissurdas, *see* Baneshwar Das.

Banyan, *see Banian*

Barber, 28.

Batgettpore, *see* Bajitpur.

**Batta*, 29, 30, 123. 125, 170, 186

Beard, John, 206, 209-11, 220, 225.

Beatle box, *see* Betelbox.

Benarasi Das, 75.

Bengal, 59, 106, 221.

Berkeley Castle (ship), 221.

Betel, 140.

Betelbox, 66.

Bettle, *see* Betel.

Bhatia Lake, 222.

Bhooteas, 224.

Births, register of, 14.

Blazing Star, *see* Halley's Comet.

Bobbo-Ray, *see* Babu Ray.

Bogra district, 219, 220.

Boola Khan, *see* Bula Khan.

Boolchund, *see* Bal Chand Rāi.

Boughton, *Surgeon* Gabriel, 224.

Brickbats, 144.

Brick houses fall at Malda, 131.

Bricks thrown into factory at Malda, 114.

Broadcloth, 26, 67, 71, 76, 100, 117, 123, 137, 141, 167, 174-76, 194, 207.

Buddeelidass, *see* Badridas.

Budgeerook humeed Caune, *see* Buzurg Umed Khan.

*Budgerow, 8, 127.

——, want of, 61.

Bugden, Edmund, 173-75, 178, 180, 224.

——, Richard, 209.

Bula Khan, *Mirza, Faujdar of Purnea*, 107, 109, 111, 178.

Bullion, 74, 75.

**Burgunny*, 53, 54, 56, 58, 59, 61, 72, 74, 81.

Burhi ganga (river), 225.

Burials, register of, 14.

Buttedah Gopolpore purgona, *see* Gopalpur.

Buzurg Umed Khan, 176, 224.

Candles, 28.

Cape, Richard Abraham, 209.

Carleton, Samuel, 144.

Carpet, Persian, 108

Cash accounts to be balanced monthly, 14.

Cassambazar, *see* Kasimbazar.

Cassas, *see Khasa.*

Cattwal, *see Kotwal.*

*Chandeny, *see Chandni.*

Chandni, 9, 51, 56, 99, 118, 120, 126 133, 145. 170, 183, 199.

Chandraban, of Runsea, 179-80, 187, 207.

Chapel at Malda, 31.

*Chappa maul, *see Chhap mahal.*

*Charcounaes, *see Chārkhānā.*

Chārkhānā, 9, 56, 64, 81, 103-4, 107-8, 129, 133 170, 183, 199. 203.

Charnock, Job 134. 161, 163, 174, 196, 207, 210, 223.

**Chasni*, 80.

Chauki, 106.

*Chaup. *see Chhap*

Chevildas Shah, 148, 155.

**Chhap* (stamp, seal), 81, 109, 122, 127, 129, 164-65, 176.

*—— *mahal*, 98.

—— *nurd*, 124.

Chhota Bhagirathi (river). 225.

Chiefs of subordinate factories not to leave their factories without orders, 28.

Chimcham Saw, *see* Khemchand Shah.

China silk, 10.

Chinaware, 52, 155.

Chintaman Shah, 173, 178.

Chitr Mal Shah, 29, 30.

Chittermull Saw, *see* Chitr Mal Shah.

**Chobdar* (mace-bearer), 134, 190.

Chop, *see Chhap.*

Chowkey, *see Chauki.*

*Chupdar, *see Chobdar.*

Church of England, 130.

Clavell, Walter, 11, 16, 20, 22, 23, 221.

Clock, as present. 142.

Cloves, 104.

Coja Enaitula, *see* Inayat Ullah, *Khwaja.*

Cole, *Mrs.* Mary, married, 130.

Coloured goods, 61, 68, 73, 74, 77, 80, 175.

*Colsa, *see Khalsa*

Comaul Cawne, *see* Kamal Khan

Comet, Halley's, 192, 224.

*Congoy, *see Kanungo.*

Cook, 28.

*Corconna, *see Karkhana.*

Coromandel, Coast of, 32.

Cosid, 150.

*Cossaes, *see Khasa.*

*Cossed, *see Cosid.*

Court of Committee (London), 11.

*Cozzee, *see Kazi.*

Crepoll, *see* Kripalal *dalal.*

*Crowry, *see Krori.*

Crystalline ware, 100, 107.

Culmull Beg, 118.

Cundegur, *see Khandigar.*

Cundimul, 124.

**Cundy*, 140.

*—— *nurd*, 122.

Cunjemun Shah, 52, 56, 59, 81, 99.

Cursing, penalty for, 33.

*Cutcherry, 190-91.

Dacca, 2, 4, 10, 12, 21, 30, 61, 98, 102, 110-11, 127, 141, 157, 165, 175, 180, 182, 195, 203, 210-11, 221, 223-24.

—— *darbar* charges, 12.

—— Mir Jumla removes his capital from Rajmahal to, 1.

—— *vakil* at, *see* Price, James.

*Dadine, *see Dadni.*

Dadni (money on account), 29, 104-5, 112, 114-15, 119-20, 123, 125-26, 133, 153, 160, 162, 165, 168, 171, 175, 178, 180, 182, 184, 194, 199, 203.

Daftar (record), 162.

Dagger cases, 156.

**Dalal*, 50, 61, 64, 75, 99, 104, 109, 124, 140, 178-79, 207.

**Dalan* (dying room), 11.

**Dandi* (boatman), 121.

Danes, the, 15.

Darbar, 26, 102, 158, 196.

—— charges of Dacca, 12.

Darbhanga, 109.

Daroga of the *adalat*, 158.

—— of the cutcherry, 78.

—— of the *Shar*, *see* Sayyid Jafar.

Dastak (pass), 76, 106, 111, 115, 131, 134, 149, 164, 171, 174, 200.

Dasturi (commission), 30, 31, 78, 172, 199.

Daud Khan, *Chief of Afghan merchants*, 129, 142, 156, 202.

Daudpur, 53, 68, 114.

Daulat Beg, *Daroga of the mint at Rajmahal*, 118, 136.

Dawadpore, *see* Daudpur.

Deepchund, *see* Dipchand.

Deer, a, killed, 134.

Delassa, 111.

Delaur Caun, *see* Dilawar Khan.

*Delawne, *see Dalan.*

Diet charges, 14.

—— money, 27.

Dilawar Khan, 65.

Dinajpur, 219.

Dipchand, 173, 178.

Divine service, penalty for missing, 33.

Doll Geloff, 148.

**Doorea*, 53, 59, 195, 199.

Dowlut Beag, *see* Daulat Beg.

*Droga, *see Daroga.*

Drunkenness, penalty for, 33.

*Duffter, *see Daftar.*

Du Jardin, Clement, 77, 79, 221.

Durbunga, *see* Darbhanga.

*Dustick, *see Dastak.*

*Dustoore, *see Dasturi.*

Dutch Directore, 168-69.

—— doctor, present to, 6.

—— *Faujdar's* servants quarrel with the, 68.

—— garden, 168

—— *paikars*, 123.

——, the, 8, 15, 69, 174.

—— quarrel with the Afghans, 168.

—— quarrel with the *Krori's* people, 102.

Earthquake at Malda, 68.

East India Company, seal of, 32.

East India Company, title of, 21.

Edwards, Richard, 1, 2.

*Elatcha, _see Alacha._

Ellis [Elliot], John, 62, 221.

——, John, arrives at Malda, 61.

England, 10, 16.

Englezavad, _see_ English bazar.

English bazar, 6, 129, 150, 171, 173, 200.

——, origin of, 5.

——, work begun at new factory at, 141.

*Erindie, _see Arindi._

*Essay, _see_ Assay.

Europe, 9.

—— goods, 18.

—— ships, 144.

Evans, _Right Rev._ John, 4 (footnote).

Ezardar, _see Ijardar._

Factories, orders for civil government of, 31.

Factory, penalty for keeping out of, at night, 33.

*_Farman_, 111, 116, 128, 158. 162.

Fath' Ullah, _Shaikh_, 127.

*_Faujdar_, 65, 72, 109, 111, 158.

Fines, for absence from Divine service, 33.

——, for drunkenness, 33.

——, for lying, 33.

Fires, 69, 166.

Firminger, _Ven._ W. K., 219.

Flags, orders regarding use of, 23.

Flint ware, 169.

Fornication, 33.

Fort St. George, 4, 15-18, 24, 33, 51, 75, 221, 224.

Foster, William, 6, 219.

*Fowsdar, _see Faujdar._

French, the, 15.

Gangaram 208.

Ganges (river), 1, 2, 225.

Gaur, 1 (footnote), 5, 222.

Gaut, _see Ghat._

Gautkaguzzer, 124.

Gazi, 160.

"Generall," 194, 224.

*Gentue, _see_ Hindu.

George (ship), 125.

Geragaut, _see_ Ghoraghat.

Ghanashyam Das, 51-54, 59, 63, 66, 70, 72-74, 76, 99, 170, 188, 192, 206-7, 210-11.

Ghari, 113

Ghat (landing place), 164.

Ghoraghat, 49, 127, 220.

Ghulam Mehendi, _Shaikh, Faujdar of Rajmahal_, 61, 65, 117, 147, 149.

Ginger, 100, 105.

Glass, multiplying, 101, 107.

——, triangular, 67, 70, 101, 107.

Gobindaram, 178.

Gogg, _see_ Hog.

Gold, 29.

*Gomaustah, _see Gumashta._

*Gonnagarree, _see Gunagari._

Goods, coloured, 77.

—— directions for expressing names of, in invoices, 21.

—— white, 67, 77, 163.

Goopenaut, *see* Gopinath.

Gooragaut, *see* Ghoraghat.

Goosainedas, *see* Gosaindas.

Gopalpur, 90, 109, 137, 144, 165, 222.

—— *pargana*, *Krori* of, *see* Panchananda Ray.

Gopinath, 74.

Gosaindas, 206.

Gowar, *see* Gaur.

Griffith, John, 49, 220.

Gualla Gaum, 44, 220.

Gujarat, 2.

Gumashta, 68, 71, 122, 153, 165, 174-75, 182, 202.

**Gunagari* (penalty). 158, 182.

Gungapagla, *see* Burhi ganga river.

Gungaram, *see* Gangaram.

Gunnishandas, *see* Ghanashyam Das.

Gupta, J. N., 219.

Gurgolet bottles, 100.

**Gurriall*, 28.

*Gurry, *see Ghari*.

Guzzaratt, *see* Gujarat.

*Guzzergaut, 98.

Guzzy, *see Gazi*.

Gyfford, William, *President at Fort St. George*, 225.

Haji Muhammad, "the prince's Duan," 10, 219.

Haji Safi Khan, 50, 60, 116, 121, 128, 135, 147, 198.

——, his *parwana*, 107, 136, 220, 222-23.

——, his son, 163.

—— leaves Patna for Dacca, 60

Haldibari, 174-75, 224.

Haldibari, *Faujdar* of, *see* Kamal Khan.

Halley's Comet, 192, 224.

Hamilton, Walter, 220.

Haranarayan Ray [R. Nanda Lāl], *Kanungo of Bengal*, 4, 38, 98, 110, 124, 127, 131, 134, 137, 140, 152, 165, 219, 223.

**Hari* (sweeper), 61.

Haricharan, *vakil*, 76.

Haripur, 54, 221.

Hari Shah, 48, 52.

Harry, *see Hari*.

Hasb'ul-hukum, 171.

Hedges, William, 187-88, 219, 222-24.

Hemraj, 141.

Herderam Tewarre, *see* Hridayaram Tiwari.

Hergolol, 105, 108-9 113, 124, 128, 131, 153.

Hernaraine Ray, *see* Haranarayan Ray.

Hervy, Samuel, *Chief of Dacca*, 11, 16, 20, 21, 23, 134, 146, 219, 224.

*Hesob, *see Hisab*.

Hijli, 6.

Hill, Thomas, 195, 197, 199-201, 206-7, 210-11, 224-25.

Himradge, *see* Hemraj.

Hindu holiday, 144.

Hindus, 10, 100, 105, 111, 165, 195.

Hindustan, 105.

Hingut Das, 133.

**Hisab* (account), 210.

Hodge Mahmut, *see* Haji Muhammad.

—— Zuffe Caun, *see* Haji Safi Khan.

Hodges, William, *see* Hedges.

Hog's flesh, 61.

Hogs, wild, killed at Malda, 64.

Hooghly, 12, 13, 15, 16. 20, 22, 24, 30, 31, 50, 52, 53, 55, 58, 60-62, 65, 69-75, 80, 98, 99, 103 111-12, 114, 117-18, 120-21, 124, 130-32, 135, 141, 144, 149, 161-65, 169-71 176, 179 182, 184-85, 187, 190, 194-95, 201, 206-7, 211-12.

——, account of trade at, 4.

—— servants' wages at, 27, 28.

——, troubles at, 10.

Horses, 220.

House hired at Malda, 8

Hridayaram Tiwari, 54, 59, 66 98, 188, 210.

Huldybarry, *see* Haldibari.

*Hummums, 30.

Hunter, *Sir* William Wilson, 221.

Hurrypore, *see* Haripur.

Hurry-Saw, *see* Hari Shah.

Husain Shah, 1.

*Husball Hookum, *see* *Hasb-ul-hukm.*

Ibrahim Beg, 124.

Ijara, 57, 60, 65, 98. 110, 150

Ijardar, 109-10.

Imprests on goods, 10, 153, 171.

Inayat Ullah, *Khwaja,* 157, 165-66.

India Office, Malda Factory Records in, 5.

Ingots, 74, 80, 114, 119.

Intestate estates, 22.

Investments, orders regarding, 29.

Invoices, orders *re* drawing up of, 12.

Islam Khan, 2 (footnote).

Ismael Ghazi Khan, 220.

Istwar Khan, 221.

Jaddodass, *see* Jadu Das.

Jaddoray, *see* Jadu Ray.

Jadu Das, 98.

——, *paikar,* 200.

—— Ray. *Faujdar's diwan,* 118, 141.

Jaggeer, *see* *Jagir.*

Jagir 110, 113.

**Jagirdar.* 79.

Jairam Malik, 41, 219.

Jameshire beage, *see* Jamshed Beg.

Jamshed Beg, *Krori of Malda,* 8, 59. 67, 68, 98, 124-25, 128-29, 132, 135, 138-40, 143, 148-49, 152, 155-56, 158, 164, 166, 168, 173-75, 180-82, 194, 202-3, 208, 210-11, 219.

—— imprisons Malda *paikars,* 127.

Jarden, Clement du, *see* Du Jardin.

Jasodanandan, 181, 187.

Jaziya (poll-tax), 52, 120, 220.

Jeamshire Beag, *see* Jamshed Beg.

Jemidar, *see* Zamindar.

*Jentue, *see* Hindu.

Jessoodanundun, *see* Jasodanandan.

*Jidgea, *see* *Jaziya.*

*Jimmedar, *see* Zamindar.

Jolland, William, 195, 199, 213, 225.

Junglebari, 221.

*Jydgea, *see* *Jaziya.*

Kaibartagram, 44, 220.
Kakeshelan tribe, 220.
Kālindri (river), 1, 225.
Kamal Khan, *Faujdar of Haldibari*, 163, 178.
**Kanungo*, 38, 110, 122.
**Karkhana* (workshop), 122
Kasimbazar, 2, 4, 10-14, 20, 21, 24, 26, 29, 30, 32, 49-55, 60-62, 65, 66, 69, 70, 73, 77, 98, 134, 144, 165, 171, 173, 176-77, 180, 184, 188, 190, 195-97, 201, 223.
—— Chief of, *see* Littleton, Sir Edward.
*Katra, the, 95, 222.
Kazi, 81, 104, 109, 111, 117-18, 122, 166, 203.
**Khalsa*, 106
Khandigar, 82, 113, 222.
Khasa, 10, 50-52, 103, 123, 148, 150, 152, 170, 178-79, 181.
Khemchand Shah, *paikar* 29, 210.
Kinchund, *see* Khemchand.
Kipling, Rudyard, 5.
Kiran-Nath Dhar, 6.
Kisoriganj, 221.
Kissondas Saw, *see* Krishnadas Shah.
Knife, as present, 60, 67, 79, 111, 118.
**Kotwal*, 103.
Kripalal, *dalal*, 52, 54-56, 59, 62, 64, 66, 72-74, 81, 108, 170.
Krishnadas Shah, 148, 155, 165, 188, 207.
Krori, 8, 65, 103, 167-68, 219.
——, trouble with the, 77.
*Kundegur, *see Khandigar.*
*Kuttcherree, *see* Cutcherry.
*Kuttorah, *see* Katra.
Kybertgaum, *see* Kaibartagram.
Lal Khan, *chobdar*, 137, 145, 148.
*Lascar, 144.
Lead, 58, 76, 81, 118, 133, 157, 163, 165, 196.
Letters, orders *re* disposal of, 26.
Littleton, Ann, 4, 5, 62, 130.
——, Robert, 79.
——, *Sir* Edward, *Chief of Kasimbazar*, 3, 8, 21, 23, 69, 157, 177.
Loan taken on interest, 54.
Lol Cawne, *see* Lal Khan.
Lying, penalty for, 33.
Mace, 104.
Madras, *see* Fort St. George.
Mahadeb Ray, 151 155, 194.
Maham (river), 153.
Mahānandā (river), 1, 224-25.
Mahdeeve Ray, *see* Mahadeb Ray.
Mahipore, 43, 219.
Mahmud Husain, *see* Muhammad Husain.
Mahomedans, 195.
Mahzar, 65, 102, 110, 159, 164-65, 203, 208, 211.
Makharab Khan, *Nawab*, 127.
Makhdam Akhi Sirajud-din, 222.
Makhdampur, 81, 110, 113, 115, 122, 129, 222.
Malda, 105, 109-10, 120-21, 124, 140, 158, 161, 163-64, 166, 174, 176, 195, 202, 212, 224.
——, chapel at, 31.
——, chief of, *see* Nedham, F.

Malda, damage to buildings at, 131.
——, described, 1-3.
——, earthquake at, 68.
——, fall of brickhouses at, 131.
——, *Faujdar* of, *see* Ram Beg; Shobharam Ray.
——, fire at, 69, 166.
——, head *Kazi* of, *see* Mir Abdulla.
——, *Krori* of, *see* Jamshed Beg.
——, market at, 150.
——, "Nawab's *Jagir*," 4.
——, old, factory at, 4, 5.
——, quarrel with *Faujdar* of, 143.
——, storm and rain at, 131, 167.
——, the English arrive at, 3, 8.
——, troubles at, 122, 130.
——, troubles with *Krori* of, 124.
——, wild hogs killed at, 64.
Malik, 79.
**Malmal*, 2, 3, 9, 10, 57, 63, 68, 72, 76, 99, 103-4, 107-8, 114, 126, 129, 133, 144, 148, 152, 170, 178, 192 196.
Mamhud Husain, *see* Muhammad Husain
Mamood Lumma, *see* Muhammad Lumma.
Mandil, 8, 126, 129, 133, 183.
Mango, 111.
Maniram, *dalal*, 52 55-59, 62, 64, 66, 72-74, 98, 108, 124, 170.
Manomohan Chakravarti, 1.
Mān Singh, *Raja*, 2 (footnote).
Marriages, 130.
Marriages, register of, 14.
Marshall, John, 11, 16, 20, 21, 23.
Martin, Montgomery, 222.
Master of the *Chhap*, 109.
—— Streynsham, 11, 16, 20-23, 32, 34, 222-23.
Masters, Mr., 22-23.
Masulipatam, 18.
Matuk Shah, 126, 155 170.
Maulda, *see* Malda.
Maypore, *see* Mahipore.
Meir Abdull, *see* Mir Abdulla.
—— Mossum, *see* Mir Mahsum.
Meirbarka Daroga, *see* Sayyid Beg.
Meir Jaffer, *see* Sayyid Jafar, *Mir*.
Meirza Boola Caun, *see* Bula Khan, *Mirza*.
—— Rajub Allee, *see* Rajab Ali, *Mirza*.
—— Ruffea Zumma, *see* Rafi-u-zaman, *Mirza*.
—— Syud Beage, *see* Asad Beg, *Mir*.
*Mellick, *see* *Malik*.
Mendy beage, *see* Ghulam Mehendi.
Meirasirard beage, *see* Asad Beg, *Mir*.
Merchants' accounts, to be adjusted annually, 30.
Metchlepatam, *see* Masulipatam.
Midradpur, 200, 225.
Mint, 118, 120, 125, 127, 130, 137, 157, 162, 196.
—— at Rajmahal, 80, 118.
—— Master, 195, 200.
Mir Abdulla, *Head Kazi of Malda*, 117-18, 159, 164.

Mir Jumla, removes his capital from Rajmahal to Dacca, 2 (footnote).

—— Mahsum, 144, 157.

Mirzapur, 8.

*Mochelk, *see Muchalka.*

*Mohozzer, *see Mahzar.*

Mohun, Richard, 23, 32, 34.

Mondy Beage, *see* Ghulam Mehendi.

Moneram, *see* Maniram.

Money, orders for remitting, 12.

Monsoon, 168.

Moors, 4.

Morung. the, 1, 2, 5, 175.

Mucdumpore, *see* Makhdāmpur.

**Muchalka*, 116.

Muckrub Caune, *see* Makharab Khan.

Mucteram, *see* Muktaram.

**Mudi*, 191.

Muhammad Azam, *Sultan, Governor of Bengal*, his *nishan*, 107, 223.

—— Hyatt, 164.

—— Husain, 118.

—— Lumma. 128.

—— Zumma, *Wackanevice*, 141.

Muktaram, 52.

*Mullmull, *see Malmal.*

Multiplying glass, as presents, 101, 107, 141.

**Mum*, 207.

*Mundeel, *see Mandil.*

Murshidabad, 2, 140, 149, 164, 174, 182, 196, 201, 224.

Murshid Kuli Kan, 224.

Musk, 175.

Muslin, 222.

**Mussalchee*, 28.

**Mutasaddi*, 30, 55, 171, 173, 197, 199, 202.

*Mutsuddy, *see Mutasaddi.*

Muttuck Saw, *see* Matuk Shah.

Muxoodavad, *see* Murshidabad.

Muzaffar Khan, *Mirza*, 222.

Mymensing, 221.

Nabob Muckrub Caune, *see* Makharab Khan, *Nawab.*

—— Spindar Chaan, *see* Asfandiyar Khan, *Nawab of Purnea.*

Narasinha Gwalla, *paikar*, 204.

Nedham, Fytche, *Chief of Malda*, 8-11, 35-45, 50-64, 66, 67, 69-81, 83-96, 98-100, 102-4, 107-9, 111-21, 123-26, 128-34, 136-43, 145-51, 153, 155-56, 158, 160-63, 167, 171-74, 176-82, 185-90, 193-94, 196, 199, 201, 203, 207, 211-12.

——, Fytche, death of, 5.

——, *Mrs.* [*neé* Ann Littleton], 4, 5, 62, 130.

**Nehallewars* (Nehalwar) 3, 9, 54, 56, 58, 62, 126 129, 133, 170, 173, 183.

*Nerrick, *see Nirkh.*

New market, 150.

Nicks, John, 32, 34.

**Nirkh*, 160.

**Nishan*. 159, *162.

**Nurd*, 122.

Nurdaes, 77, 221.

Nurdmahal, 98.

Nursing Gwalltore, *see* Narasinha Gwalla.

Nya haut (new market), 150.

Obdula Caune, *see* Abdulla Khan.

Offences, penalty for, 33.

Office, orders *re* keeping of an, in subordinate factories 27.

Oosterhoof,——, *Second at the Dutch Factory*, 98.

**Orrua*, 50, 51, 115, 123, 170.

—— goods, 109.

—— *khasa*, 53, 126, 129.

Orrutt, *see Arhat.*

*Orung, *see Aurang.*

*Orungshye, *see Aurangshahi.*

Ostwār Khan, *see* Istwār Khān

Ottaram, *see* Atmaram.

*Outcry, 22.

**Pachutrika Daroga*, *see* Sayyid Ullah, *Shaikh.*

Packing stuff, 31, 53 150-51, 160.

——, account of, 12.

Pahlaud, *see* Prahlad.

Paikar, 10, 53, 55, 109. 111, 123, 128-29, 140, 158, 161-62, 164. 166-68, 178, 184, 196

*Palanquin, 28 51, 114, 175.

Panchananda Ray, *Krori of Gopalpur pargana*, 167, 171, 174, 191, 196.

Pandua, 1.

**Pansi*, (boat), 127, 200.

Paramananda Shah. 52, 58, 72, 80, 99, 107-8.

Parwana, 22, 50, 110, 113, 121, 124, 131, 133-34, 140, 157, 162. 168, 171, 174-75. 180, 182, 200.

**Patela*, 3, 106, 108.

Pathan merchants, *see* Afghan merchants.

Patna, 12, 30, 31, 50. 60, 74, 106, 121, 128, 153, 163, 195, 223

——, saltpetre at, 31.

Patni Mal, *paikar*, 53, 59.

Pattana, *see* Patna.

*Pattella, *see Patela.*

Pearce, Dudley, 77, 79.

Peerzadda, *see Pirzada.*

Peetre, *see* Saltpetre.

Peranaut, *see* Prannath.

Permanundsaw, *see* Paramananda Shah.

Perranaut, *see* Prannath.

Persaud Moodee, *see* Prasad Mudi.

Persia, 105.

Persian carpet, 108.

Pertemull, *see* Perti Mal.

Perti Mal, 49, 52, 108.

**Peshdast*, 67, 194.

**Peshkash*, 175, 217.

*Petesdust, *see Peshdast.*

Petre, *see* Saltpetre.

Phalaud, *see* Prahlad.

Pharisees, 140.

*Phermaund, *see Farman.*

*Phirwanna, *see Parwana.*

Phuti mosque, 1.

*Picar, *see Paikar.*

Pine, Samuel, 70, 173-74, 179, 199, 213-14, 224.

Pirzadda, 79, 221.

*Piscash, *see Peshkash.*

*Pitan (Pathan) merchants, *see* Afghan merchants.

**Poddar*, 30, 195.

Pole money, *see* Poll money.

Poll money, 166.

Pork, 65.

Poronia, *see* Purnea.

Port charges, 26.

Porunmull, *see* Puran Mal.

Prahlad, 60, 61, 66, 72, 111, 119, 125. 148, 153, 155, 160.

Prannath, 59, 66, 99, 119, 165, 167.

—— obtains loan on interest, 54.

Prasad Mudi, *dalal*, 50-53, 123, 125, 129, 133, 178, 200.

Price, James, *vakil at Dacca*, 134 136-37, 140, 224.

Prickman, Jonathan, 8, 35-42. 44-48, 50-64, 66, 67, 69-81, 98-109 111-21, 127-28, 132-33, 135, 140-41, 143, 146-47, 149, 156, 164, 167, 171, 191, 194-97, 199, 201-4, 206, 208-9, 211, 213.

—— arrives at Malda, 98, 125.

—— dies, 6.

—— marries, 130.

Profanation of the Lord's Day, 32.

Public table, orders *re* keeping of a, 27.

Punchanund, *see* Panchananda.

*Punsewy, *see* *Pansi*.

Puran Mal, 173, 178.

Purnea, 60, 65, 71, 100. 104-5, 108-9, 111-12, 117, 124, 128, 131, 153, 165, 173-75, 190, 196, 207, 210-11.

——, *Faujdar* of, *see* Bula Khan.

——, list of *Faujdars* of, 221.

Purranaut, *see* Prannath.

Purser General, 14, 103

Pursotum, *see* Purushottam.

Purushottam, *dalal*, 52, 108.

Puttune Mull, *see* Patni Mal.

Quicksilver, 58, 60, 66, 74, 76, 81, 99, 113, 119.

Rafi-u-zaman, *Mirza*, *Daroga of the Dastakmahal*, 117-18, 135, 141, 147, 200.

Rafters, 55.

Raghu, *Assaymaster*, 127.

Rai Nanda Lal, *see* Haranarayan Ray.

Rajab Ali, *Mirza*. *King's diwan*, 108, 116-18, 121, 127, 135, 141, 146-47, 197-98, 200.

Rajamaull, *see* Rajmahal.

Rajaray Chaudhuri, 5, 81. 114, 121-23, 125, 133-34, 138, 174, 182, 196 202, 211.

Rajeb, *see* Rajib.

Rajeeb, *see* Rajib.

Rajib, 52.

Rajmahal, 52, 55, 60, 61, 65, 100, 104, 108, 114, 116-17, 119, 121, 127-28, 130-33, 136, 140-41, 146, 164-67, 170-71, 190-91, 194-97, 200, 201, 211, 224.

——, *Daroga of*, *dastakmahal* of, *see* Rafi-u-zaman.

——, ———— *mint at*, *see* Daulat Beg.

——, English agents despatched to, 115.

——, *Faujdar* of, *see* Ghulam-Mehendi, *Shaikh*.

——, history of, 1.

——, *Kazi* of, 67.

——, mint at, 1, 30, 80.

——, troubles at, 57, 141.

——, *vakil* at, *see* Sukhdeb Ray.

Rakhaldas Banerji, 6.

*Ramall, see *Rumal.*

Ram Beg, *Faujdar at Malda*, 8, 67, 103, 124.

Rambhadra, 60, 61, 66, 72, 155.

Rambudder, *see* Rambhadra.

Ramchand, *paikar*. 200.

Ramdas, 190.

Ramhudder, *see* Rambhadra.

Ramkisson *see* Ramkrishna.

Ramkrishna, *silk merchant*, 49, 52, 108, 176.

Ramnath, 125. 142. 155, 163. 171, 173.

Ram Singh, 156.

Ravenshaw, J.H.. 222.

**Rawana*, 116.

Rawpore. 157.

Ray, J., 6.

Reade, Edward, 11, 16 20, 23.

Receipt book, 23.

Regulations for better conduct of the Company's affairs, 23.

Rennell, *Major* James, 224-25.

*Rewanne, *see Rawana.*

**Reyng*. 72, 81, 104. 108, 114 119, 126, 133, 170, 173.

*Riall, *see Ryall.*

Rice, 152.

Ridsdale, *Rev.* A.C., 6, 224.

Rivers—

- Burhi ganga, 225.
- Chhota Bhagirathi, 225.
- Ganges, 1, 2, 225.
- Kalindri, 1, 225.
- Maham, 153.
- Māhanandā, 1, 224, 225.

Roggee, *see* Raghu.

Rosewater, 66, 67, 100, 103-4, 107-8 117-18, 155, 199.

Ruddermun, *see* Rudraman.

Rudraman, 100, 104, 153, 155, 160, 182.

**Rumal*, 186, 190.

Runsea, 179.

*Rupee, *sicca*, 29, 123, 133, 165.

Ryall, 29. 80, 194.

Sadananda, 179, 181, 187, 199.

Sadatban Khan, 47.

Saif Khan, *Nawab of Bihar*, 50.

**Salami*, 179.

Salary, account of, 26.

—— accounts, how to be kept, 12.

Salt, 203.

Saltpetre, 3, 31, 56, 60, 65, 71, 100, 105-6, 113, 121, 149, 153, 160, 169, 174, 182, 197, 200.

—— at Patna, 31.

Sambdass, *see* Shambhu Das.

Samdas, *see* Shyam Das.

Sanad, 171.

Sancta Cruz (ship), 221.

Sangat Das, 170, 179-80, 187, 207.

Santosh, 206.

**Sar-o-pa*, 2, 78, 168.

**Satranji*, 150, 155.

Saymaster, *see* Assaymaster.

Sayyid Beg, *Mirbarka Daroga*, 118, 168.

—— Jafar, *Daroga of the Shar*, 94, 222.

—— Khan, *Amir*, 220.

—— Ullah, *Pachutrika Daroga*, 118.

**Scarlet*, 60, 67, 76, 107, 141, 175.

Scissors, as presents, 79, 101, 107, 118, 141.

Seal, the Company's, 22.

*Seekdar, *see Shikdar.*

*Seerbund, *see Sirbandh.*

*Seerpaw, *see Sar-o-pa*

Seerpore (Sherpore), 10, 49, 219.

**Seersucca* (*Seersucker*), 81, 99, 126, 133, 170, 173, 183.

Selliman, *see* Sulaiman.

Servants directed to reside in their factories, 22.

—— wages at Hooghly and subordinate factories, 27, 28.

Shabazpur, 10, 63, 68, 74, 115.

Shah Jahan, *Emperor of Hindustan*, 219.

—— Shuja, *see* Shuja, *Sultan.*

Shahpore, 79, 134.

Shaistah Khan, *Governor of Bengal*, 4, 168, 200, 222 23.

——, his *dastak*, 157.

——, his *parwana*, 107, 151.

Shambhu Das, *gumashta at Daudpur*, 52, 53, 59, 68, 103, 108, 119, 123, 180.

Shambhunath, 70, 114, 133, 180-81, 184, 189, 192, 197, 199, 202, 206.

Shara, 110, 223.

Shasteh Caun, *see* Shaistah Khan.

Sheck Futtula, *see* Fath' Ullah, *Shaikh.*

—— Sydula, *see* Sayyid Ullha, *Shaikh.*

Sheeck Golom Mohuddie, *see* Ghulam Mehendi.

Sheek Yacoob, *see* Yakub, *Shaikh.*

Sheppard, Mathew, 11.

Sherra, *see Shara.*

Shikdar, 109, 191.

Ships—

Anne, 125.

Berkley Castle, 221.

George, 125.

Sancta Cruz, 221.

Shobharam Ray, *Faujdar of Malda*, 134, 164.

Shroffs, 77.

Shuja, *Sultan*, *nishan* of, 22, 219.

Siam, 4.

*Sicca rupee, *see* Rupee, *sicca.*

Sikkim, 224.

Silk, China, 10.

—— raw, 2, 21.

Silver, 29, 72-73, 114-15, 120, 127, 131-32, 157, 196.

—— ingots, 77, 80, 119.

Simbodas, *see* Shambhu Das.

Simbonaut, *see* Shambhunath.

**Sirbandh*, 9, 64, 72, 76, 81, 111-12.

*Sitterengee, *see Satranji.*

Sloops, masters of, 22, 23.

—— not to sail at night, 31.

Soodanand, *see* Sadananda.

Sookanund Saw, *see* Sukhananda Shah.

*Soosye, *see Susi.*

Sowden, John, 50, 220.

*Sozzies, *see Susi.*

Spectacles, as presents, 67, 101, 107, 118, 141.

Spindar Caun, *see* Asfandiyar Khan.

Sterling, Thomas, 173.

—— dies, 188.

Steward, William, *Svrgeon*, 144.

Stewart, *Major* Charles, 220.

Stone, 123. 134, 174.

——, George, 167, 174, 224.

Stores, account of, 14.

Storm at Malda, 131, 167.

Story, David, 222.

——, *Mrs.*, 98, 130 222.

Suckanund Saw, *see* Sukhananda Shah

Suckedeverav, *see* Sukhdeb Ray.

Suckerchinnes, 9

Sukedevee, *see* Sukhdeb.

Sukhananda Shah, 58 149.

Sukhdeb "our Rajamaull vaquell, 50, 57, 72-74, 170

Sukhdeb Ray, 76

Sukhdeb Tundun, 126, 129, 133, 190.

Sulaiman, *paikar*, 111.

—— Shah Karani, 224.

Sultaun Auzzum, *see* Muhammad Azam, *Sultan*.

Suntoaes, *see* Santosh,

Surat, 12-14, 22, 171.

**Susi*, 9.

Swearing, penalty for, 33.

Sword blade, as present, 60, 66, 175, 178, 203, 207.

Sybram Ray, *see* Shobharam Ray.

Sydulapore, 97, 222.

Syfe Caun, *see* Saif Khan.

Symbonaut. *see* Shambhunath.

Symboodass, *see* Shambhu Das.

Syud Beag, *see* Sayyid Beg.

**Taffatyes* (*Taffeta*), 14, 21.

**Tagadgir*, 30, 68, 74, 120, 172-73, 199.

*"Taggeered," 98, 124. 166, 222.

*Tagoordas, *see* Thakurdas.

**Talica*, 140, 166, 168.

*Tancksaul, *see* Mint.

Tanda, 149, 224.

*Tangeeb, *see* *Tanzib*.

Tanyan horses, 220

Tanzib, 9, 52, 63, 68, 72, 76, 103-4, 107-8, 114, 126 129, 133, 152, 170.

Temple, *Sir* Richard Carnac, 1, 2-7, 219, 225.

Thakurdas, 60. 192, 213.

Timber, 71, 125, 163.

Tin, 3.

Tittillia, 40, 219.

Toarrah, 110 223.

Tockoredas, *see* Thakur Das.

Trenchfield, Richard, 50-51, 53-64, 66, 67, 69-89 91-98, 100-103.

—— dies, 6.

—— goes to Hooghly, 4, 103.

Trepore Saw, *see* Tripura Shah.

Triangular glass, 67, 101, 107.

Tripura Shah, 108, 126, 133, 155, 170.

Turmeric, 100, 105, 153, 160, 174, 182, 210.

**Tuttenagg*, 3.

Uncleanness, 32, 33.

**Vakil*. 30, 50, 60, 71, 125, 130, 164, 166-68. 173-75, 199-200.

*Vaqueell, *see* *Vakil*.

Velvet, 176, 207.

Vincent. Matthias, *Chief for the Hon'ble E.I. Co's. affairs in* *the Bay of Bengal*, 8, 9, 11, 16, 20, 21, 23, 32, 34, 51, 56, 69, 77, 81, 100, 112 130, 185, 219, 221, 223.

**Wackanevice*, 128.

Wanges, 9, 219.

Washers, 77, 113.

White glass, 67.

—— goods, 163

Wild hogs killed at Malda, 64.

Wills, register of, 14.

Wilson, H. H., 7.

Wilson, C. R., 4, 220, 222.

Wine, 207.

Wood, 56, 65.

——, *Mr.*—, 200

Yakub, *Shaikh*, 151, 165.

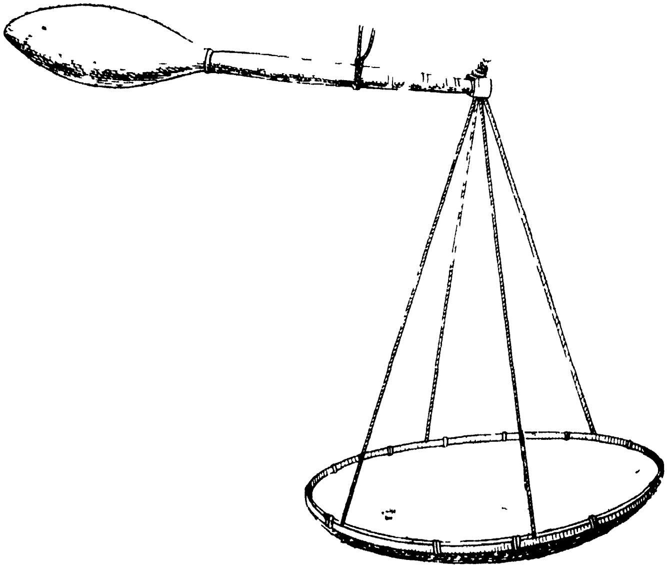
Yule, *Sir* Henry, 7, 200, 201, 219, 223.

Zamindar, 57, 171, 176, 182.

2. A Bismer Weighing-Beam from the Darjeeling District.

By N. ANNANDALE, D.Sc., F.A.S.B.

The beam described in this note was obtained in the village bazaar at Mungpu in the Darjeeling district of the Eastern Himalayas in October, 1917. It was used by an old Nepali woman who was selling condiments such as ginger and turmeric. The local name, in the dialect of Hindi called Pahari in that part of the Himalayas, is *dāndīshīr*. The apparatus consists of a beam and a scale-pan, with the necessary strings for suspension.



The beam is made of wood painted with some black varnish and cut rather roughly into shape. Though made in a single piece it consists of two distinct parts:—(*a*) the beam proper, which is cylindrical, about 17 mm. in diameter and 22 cm. long; and (*b*) an egg-shaped bulbous extremity 15 cm. long and 56 mm. in diameter at the broadest point. The beam proper is separated from the terminal bulb, the object of which is to give weight, by a raised ring carved in the wood At its free extremity the beam terminates in a squared enlargement through which passes the upper end of the strings by which the pan is suspended. On one side of the beam, between this enlargement and the proximal end of the terminal bulb, there are six rather irregular notches representing the scale of weights. The suspending string can be moved along the beam, round which it is tied in a loop, from notch to notch. When the beam hangs level with this loop in the notch nearest the terminal bulb the object in the pan is said to weigh 2 seers. I find that the different notches correspond roughly to the following weights avoirdupois:—1 lb., 2 lb., 3 lb., 4 lb. and 5 lb. The pan, which is 27·5 cm. in diameter, is circular and nearly flat. It is composed of bamboo basket-work and painted with the same varnish as the beam. It is suspended by four strings, each *ca.* 32 cm. long, which pass through its margin and are tied together in a knot above the square enlargement at the end of the beam

Though the suspending string can be moved from notch to notch and each notch represents a definite weight I noticed that in practice it was always left in the notch corresponding to 1 lb. Thus the beam, though made to weigh out various quantities, had actually become merely a device for separating a single fixed quantity from the material to be sold. In some respects, therefore, the beam is intermediate between the Shan type[1] with fixed suspending strings and the ordinary Indian type in which the suspending string is moved along a scale on the beam.

---

[1] See Annandale, *Mem. As. Soc. Bengal*, V, p. 199 (1917).

I may point out an unfortunate printer's error on p. 198 of the paper cited. In the seventh line from the bottom of the page the word " apex " should be substituted for the word " other."

3. Bhavabhuti as a Mimansaka.

By Dinesh Chandra Bhattacharyya.

It is well known that Bhavabhuti belongs to a family preeminently of Vedic traditions, and passages of Vedic reminiscence are found here and there in his dramatic works. [*See* especially Keith : Bhavabhuti and the Veda in J.R.A.S., 1914, p. 729.] He was undoubtedly a Vedic scholar. The late Mr. S. P. Pandit, on the strength of an old manuscript of the *Mālatīmādhava*, sought further to prove that Bhavabhuti was also a *Mimānsist* and a disciple of Kumārila Bhatta. [*Gaüdavaho* Introd., Note iv, pp. ccv, etc.] This singular manuscript, while expressly naming Bhavabhuti as the author at the end, has the following remarkable Colophons to Acts III and VI :—

इति श्रीभट्टकुमारिलशिष्यकृते मालतीमाधवे तृतीयोऽङ्कः ॥

इति श्रीकुमारिलस्वामिप्रसादप्राप्तवाग्वैभवश्रीमदुम्वेकाचार्य्यविरचिते मालतीमाधवे षष्ठोऽङ्कः ॥

This naturally led to an inference that Bhavabhuti must himself have been a disciple of Kumārila Bhatta. Dr. Bhandarkar (Preface to his 2nd ed. of the *Mālatīmādhava*) however emphasises the facts that Bhavabhuti gives us the name of his *guru* as Jnānanidhi (Viracharita I. 5) and precisely omits the *Mīmānsā* from among the subjects studied by him (*Malati.* I. 9) ; and though he does not reject the other statement entirely remarks that " its verification must be left to future research." But it is possible that Jnānanidhi initiated our poet in some system other than the *Mīmānsā* and that his **वेदाध्ययनं** to which he gives the first place among his subjects of study, probably included the *Mīmānsā*.

No satisfactory account has hitherto been forthcoming about *Umvekāchārya* and his connection with Bhavabhuti. Some maintain that the *Mālatīmādhava* was left incomplete by Umveka and subsequently finished by Bhavabhuti, though this duality in its authorship goes against all evidence internal or external. A flood of light is thrown on the question by the following remarkable reference. Chitsukha Muni, author of the **तत्त्वप्रदीपिका**, better known as the **चित्सुखी**, is thus refuting one of the definitions of **आगम** :—

तथाप्तवाक्यं शब्दप्रमाणमिति नैयायिकानामपि (लक्षणमलक्षणमिति शेषः) आप्तोदीरितवाक्येषु मालतीमाधवादिषु । व्यभिचाराच्च तदुक्त-

माप्तत्वस्यानिवर्त्तितः ॥ ३२ स्वकपोलकल्पितमालतीमाधवादिवाक्येषु प्रामाण्याभावादतिव्याप्तिः । न हि पुराप्त एव सन्नाटकनाटकादि-(नाटिकादि in the *Pandit*)-प्रबन्धविरचनमात्रेणानाप्तो भवति भवभूतिः । उक्तं चैतदुम्बेकेन (उम्बकेन in the *Pandit*) "यदाप्तोपि कस्मैचिदुपदिशति न त्वयाननुभूतार्थविषयं वाक्यं प्रयोक्तव्यं यथाङ्गुल्यग्रे हस्तियूथशतमास्त इति तत्रार्थव्यभिचारः स्फुट" इति ॥

(तत्त्वप्रदीपिका Benares Litho. ed. of 1945 Vikrama, p. 84a of Chap. II; also in the *Pandit*, vol. V, p. 576.)

So according to the great Vedantic scholar, Bhavabhuti even before he was a poet was regarded as an आप्त—a recognised authority in one of the systems of philosophy presumably the *Mīmānsā*. But the commentator प्रत्यक्स्वरूप goes further :—

नन्वौत्प्रेक्षिकार्थं वचांसि नाप्तवाक्यानि अतो नातिव्याप्तिरिति तत्राह न हि पुरेति । नाटकादि काव्ययोगान्ता नाटकविशेषा । भवभूतिरुंवेकः—एतदेव ग्रन्थान्तरस्थेन तद्वचनेन संमतयति उक्तं चैतदिति ॥

(*Vide* नयनप्रसादिनी comm. as in Benares ed.) Here in clear unequivocal words we have the striking statement that *Bhavabhuti is identical with Umveka*—a fact substantially corroborating the unique colophon of the MS. referred to above.

In the *Sankaravijaya* of Mādhava (VII, 116, Ānandāsram ed., p. 293) *Umveka* is mentioned as the vulgar name of the famous Maṇḍanamisra. This cannot however be accepted unless verified by stronger evidence Umveka is known to have been one of the authorities on the *Mīmānsā* and is credited with the authorship of a commentary on Kumārila's *Mīmānsāvārtika*. (*Vide Hall's Index*, p. 166 and 170.) But his philosophical works are no longer extant, except in rare quotations like the one from the *Chitsukhi*. All the same, it is a notable thing that one of our greatest dramatists happens to be a philosopher as well.

4. Some observations and experiments on the rust on *Launæa aspleniifolia* DC.

By Karm Chand Mehta, M.Sc., *Professor of Botany Agra College, Agra.*

[With Plates I-II.]

The present paper deals with some of the phenomena connected with rust on *Launæa aspleniifolio* and illustrates a few microscopic details about the anatomy of the parasite itself. It also gives an account of some of the observations and attempts to add a short supplementary description of diseased plants at various stages in the life history of the fungus. The work was first taken up at Pusa in March 1916 at the suggestion of Dr. E. J. Butler, the Imperial Mycologist, and I desire to express my warmest thanks to him for having provided me with every possible facility connected with it. *Launæa aspleniifolia* DC., is a biennial or perennial wild herb commonly known as jangli gobi. It has been fully described by Doctors Cunningham and Prain in " a Note on Indian Wheat Pests "—*Records of the Botanical Survey of India*, Vol. I, No. 7, 1896.

While attempting to investigate some of the phenomena connected with rust on wheat, Doctors Cunningham and Prain came across diseased plants of *Launæa aspleniifolia* for the first time in the Government Farm at Shibpur in February 1896. The work referred to above contains a description of diseased plants as well.

The cause of rust on *Launæa* is the parasite which was identified later on as *Punccinia Butleri* syd., nov. spec., and is described in " Fungi Indiæ Orientalis " Part I.

On the strength of observations extending over a period of full one year, the author has got to add the following few remarks about the habit of the diseased plants with a short supplementary description of the same :—

The diseased shoots in the uredo and teleuto stages like the healthy plants have got as a rule short unbranched stems bearing rosettes of radical leaves with thin lamina covered with sori (Figs. 2, 4 and 5). Uredosori ·3 – ·6 x ·25 – ·5 m.m. often arranged in circles around a central pustule. Uredospores with three germ pores, germinating freely between 10-16 hours in distilled water in the cold weather. Germ tubes with colourless and minutely granular contents (Figs. 4 and 11). Teleutosori are quite distinct from the Uredosori, found in very large numbers towards the end of the cold season although not quite absent during the first part. Sori ·3 – ·7 × ·25 – ·58 mm. Pustules contain black and shining granular contents (Figs. 5 and 12). Even the flowering shoots, though not very commonly produced by diseased plants, bear uredo and teleuto sori upon their axes, peduncles, etc.

In the aecidial stage of the fungus, the host presents a totally different form and colour, the shoots being invariably erect. Sometimes a tuft of vertical leaves arises from the top of a short aerial stem. More often the axis is elongated and branched, with long internodes and cauline leaves bearing aecidia (Fig. 3). The aecidial shoots usually spring up from the midst of a rosette of withered leaves with uredo and teleuto fructifications. Or again they may arise separately as delicate and few-leaved vertical shoots pinkish violet in colour in the beginning. In most cases the rootstock gives rise to a few branches some of which bear a rosette of leaves with uredo and teleuto sori. Others produce only leaves with aecidia. Some others again after giving rise to a few radical leaves with uredo and teleuto fructifications end in a tuft of leaves with aecidia. The axillary origin, mode of branching and the internal structure of an aecidial shoot prove without doubt that it is similar morphologically to the shoots with uredo and teleuto sori This view is supported by the fact that the aecidial shoots also give rise, in the flowering season though not quite often, to axillary slender shoots covered with aecidia and bearing very small aecidial leaves. These shoots bear small globular and malformed capitula which never open (Fig. 3 B).

The leaves bearing aecidia are as a rule smaller and much thicker than those with uredo and teleuto fructifications. They are pale green or yellow in colour with or without a pinkish violet tinge. Aecidia Cups ·35 – ·5 × ·3 – ·45 mm. on both surfaces of the leaves, margin sinuate (Figs. 6 and 9). Aecidiospores germinating freely in distilled water within 15 hours in cold weather, germ tubes two or more with yellow globules and vacuolar contents (Fig. 13).

The leaves of the aecidial shoots bear pycnidia (spermogonia) as well scattered on both surfaces. The pycnidia as a rule appear before the aecidia and are therefore found in greater abundance on young leaves which are yet more or less pinkish violet in colour. They appear to the naked eye as very minute brownish dots. When examined with a pocket magnifying lens they appear as brown specks more or less raised above the leaf surface. They are subglobose ·1 – ·14 × ·1 – ·12 mm., pycnospores (spermatia) elliptical, colourless, 3*u* in length (Figs. 14 and 10).

Passing on to the vegetative characters of the fungus we have to note that its mycelium is intercellular though not exclusively. Haustoria are more or less lobed. In the uredo and teleuto stages the mycelium is localized at places below or near the sori. In the aecidial stage it is found in every part and is copiously branched. Within the rootstock the mycelium is found both in the cortex as well as between cells adjacent to vascular bundles. Inside the leaves the mycelium attacks both palisade and spongy parenchymatous cells. Its hyphœ produce septa at very short distances. are peculiarly curved with varying thickness. Here and there are seen small oval or spherical-fungal cells peculiarly packed together (Figs. 7 and 8).

On the basis of a careful study of conditions, as regards wheat and rusts on wheat and *Launœa*, carried on during an extensive tour to many places in Central and Northern India, Doctors Cunningham and Prain thought of the possibility of generic relation between the rust on wheat and that on *Launœa*. To prove that they carried on some inoculations on **wheat** with uredospores from *Launœa* which resulted in infection of the former. Keeping in mind the chances of the spores having got mixed with some from diseased wheat these authors did not come to any definite conclusion.

In order to settle the question of the possible connection, suspected by Doctors Cunningham and Prain, between the aecidium on *Launœa* and *Puccinia triticina* (wheat rust with unknown aecidium) Messrs. E. J. Butler and J. M. Hayman carried on many inoculations on *Triticum vulgare* and *Hordeum vulgare* with aecidiospores and uredospores from *Launœa* in February, March and December 1903. The spores showed free germination, but not even a single plant caught infection.

These authors have remarked " that it is not without precedent to find an aecidium and a *Puccinia* belonging to quite different fungi occupying a particular plant at the same moment. The aecidium on *Launœa* might therefore belong to the *Puccinia* on wheat, while the *Puccinia* on *Launœa* forms a distinct species. But direct experiment, the only true test when the relationship of an aecidium is in question, has failed to support this view."

On the strength of the results of the experiments referred to above, Dr. E J. Butler has established the view " that the aecidium on *Launœa* does not belong to *Puccinia triticina* on *Triticum vulgare.* All the three spore forms on *Launœa* found at the same time show undoubtedly the fungus to be autœcious."

Inoculations on as many as thirty plants of *Launœa aspleniifolia* with uredo and aecidio-spores from the same host were attempted by the author at Pusa in March 1916. But on account of the onset of warm weather and poor germination of spores none succeeded. The following table gives the results of inoculations carried on in December 1916, and January and February 1917, at Agra. The spores in every case showed free germination :—

Date.	Kind of Spores used.	Number of plants inoculated.	Surface of the leaves inoculated.	Number of plants infected.	Inoculated spots tested after.	General Remarks.
14-12-16	Uredo	1	Upper	1	10 days	No sori at inoculated spots.
14-12-16	Uredo	1	Lower	0	Do.	
14-12-16	Aecidio	1	Upper	0	Do.	
14-12-16	Aecidio	1	Lower	0	Do.	Ditto
10-1--17	Uredo	1	Upper	1	20 days	..
10-1- 17	Uredo	1	Lower	0	Do.	..
10-1—17	Aecidio	1	Upper	1	Do.	..
10-1—17	Aecidio	1	Lower	0	Do.	,,
18-1-- 17	Aecidio	1	Upper	1	15 days	,,
18-1—17	Aecidio	1	Lower	0	Do.	,,
1—2—17	Uredo	1	Upper	1	30 days	,,
1- 2—17	Aecidio	1	Upper	1	Do.	,,

It is interesting to note that the inoculated spots developed no sori even within a month after inoculation although in sections they were found to be full of fungal hyphæ copiously branched The germ tubes in all cases of successful infection entered through the stomata.

Another noteworthy fact is that while most of the spots on the upper surface of leaves caught infection there was not a single case of infection through penetration from the lower surface.

The spores were removed directly from the fructifications and carefully examined to avoid all chances of a mixture being used for inoculations.

The fact, that both uredo and more particularly the aecidiospores from *Launœa* are capable of infecting *Launœa* itself, adds to the strength of the view already established by Dr. Butler that *Puccinia Butleri* is clearly an autœcious fungus.

The aecidium on *Launœa* does not therefore belong to any other rust than *Puccinia Butleri* found on *Launœa aspleniifolia* itself.

There is another interesting phenomenon connected with this disease, and that refers to the perennial nature of its mycelium. The presence of the mycelium within the rootstock of the host, suggests of the possibility of its having some important part towards the perpetuation of the disease. To prove this fact definitely the author transplanted from a grassy plot three diseased plants into separate pots on the 18th of April, 1916. Their aerial parts died within three or four days. On the 10th of November from one of the pots, a young shoot which had just come above the soil, was removed and was found to be full of mycelium. On the 19th of the same month a shoot made its appearance in the second pot. It produced a rosette of leaves with thin lamina and free from sori. A couple of months later a pinkish violet vertical shoot with delicate leaves came above the soil in the same pot. Its leaves pinkish violet first changed their colour and by the fifth day were noticed a large number of small orange-coloured shining raised specks. One of the leaves was removed and found to be full of mycelium; the specks turned out to be young pycnidia.

Contrary to the observation made by Doctors Cunningham and Prain the ripe aecidia were not observed by the fifth day, nor did the shoot "damp off." On the 20th of February (a month after its appearance) another leaf was removed and in a section it showed many globular bodies which were the young aecidia. The pycnidia were now quite ripe. In about a week's time the shoot suddenly got wilted. Its leaves showed large numbers of spherical patches with light brown margin. These were undoubtedly the unopened aecidia. The pycnidia now looked brown. Even after another month and a half no sori appeared on the other shoot in the same pot. On being removed and cut into sections its rootstock showed the mycelium mostly localized along the peripheral portion. On the outside the rootstock showed a few knots or collections of fungal hyphœ like those found beneath the sori on leaves. From the third pot no shoot came out, probably on account of bad transplanting as there was no trace of the rootstock even within the soil. No diseased shoot appeared in any one of the half a dozen pots into which healthy plants had been transplanted on the same day as the diseased ones. The new shoot in the second pot was properly protected against fresh infection from the air.

It is not possible to make any definite statements, about the sequence in which the various spore forms appear in this fungus, on the strength of observations carried on diseased plants. One very often observes an aecidial shoot arising from the midst of a number of withered leaves with uredo and teleuto sori. Or again it is not uncommon to see an aecidial shoot coming out separately from the rootstock. As stated above, some of the branches of the rootstock end in aecidial, and others in uredo and teleuto shoots. They are present at the same time and are practically of the same age. One occasionally comes across cases with aecidia cups and uredo sori on the two sides of the same leaf.

All these irregularities are due to the fact that the various stages are not the outcome of fresh infection but that the new shoots which arise from diseased rootstocks get infected with mycelium within those parts.

BIBLIOGRAPHY.

Cunningham, D. D., and Prain. .. A Note on Indian Wheat Rusts—*Records of the Botanical Survey of India*, Vol. 1, No. 7, 1896.

Butler, E. J., and Hayman, J. M. .. Indian Wheat Rusts—*Memoirs of the Department of Agriculture in India*, Vol. 1, No. 2.

Sydow and Butler. .. *Fungi Indiæ Orientalis.* Part 1.

EXPLANATION OF PLATES.

PLATE I.	FIG. 1.	Photograph showing on the sides two leaves of *Launæa aspleniifolia* with uredo and teleuto sori. In the middle there is a vertical aecidial shoot.
	FIG. 2.	The host in the uredo and teleuto stages of the parasite.
	FIG. 3A.	The host in the aecidial stage of the fungus showing an erect shoot with cauline leaves and long internodes covered with aecidia cups.
PLATE II.	FIG. 3B.	Part of a flowering shoot in the aecidial stage bearing malformed capitula which never open.
	FIG. 4.	Part of a leaf showing uredo sori.
	FIG. 5.	Part of a leaf showing uredo and teleuto sori.
	FIG. 6.	Part of a leaf showing aecidia cups.
	FIG. 7.	Mycelium and haustoria from diseased rhizome in transverse section.
	FIG. 8.	Mycelium inside a leaf in the aecidial stage. Vertical section.
	FIG. 9.	A young aecidium in vertical section.
	FIG. 10A.	A pycnidium in vertical section.
	FIG. 10B.	A few pycnospores.
	FIG. 11A.	A uredospore showing the germ pores.
	FIG. 11B.	A germinating uredospore.
	FIG. 12.	A teleutospore.
	FIG. 13A.	An aecidiospore.
	FIG. 13B.	An aecidiospore germinating.
	FIG. 14.	Part of a leaf from an aecidial shoot arising from the rhizome of a diseased plant transplanted during the previous year, showing young aecidia cups (spherical patches), and pycnidia (small dot-like structures).

Fig. 1. × 1½

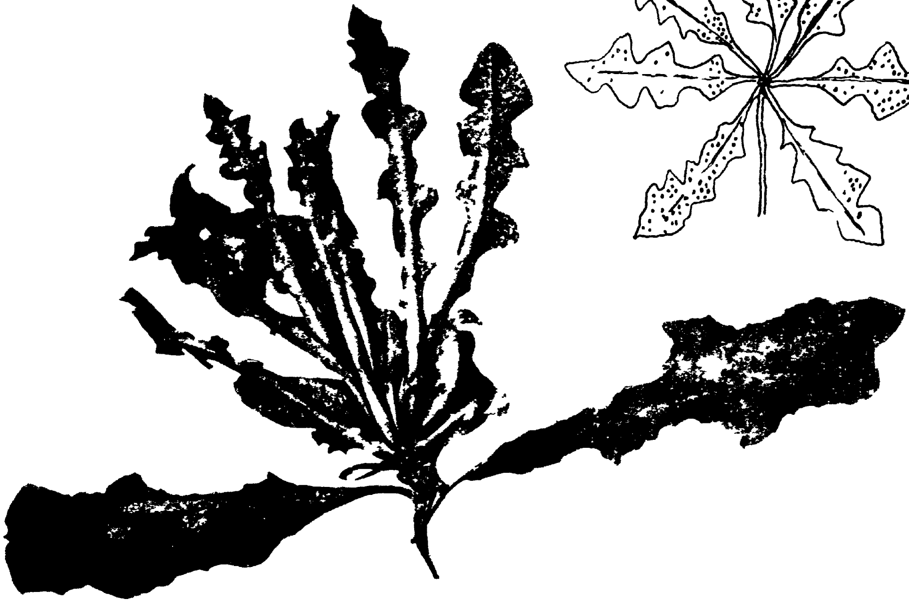
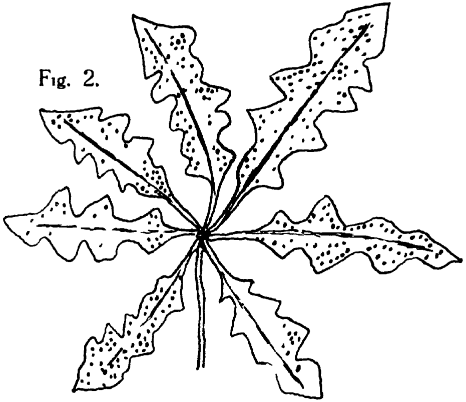


Fig. 2.



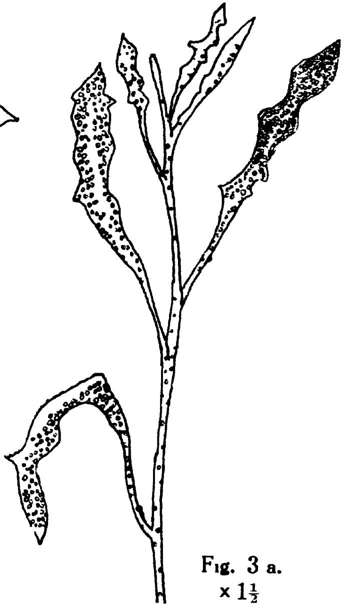


Fig. 3 a. × 1½

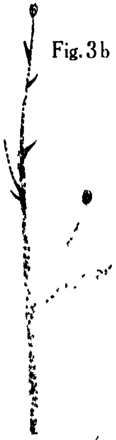


Fig. 3b

Fig. 4. x 5.

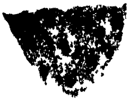


Fig. 6. x 5.

Fig. 5. x 5.

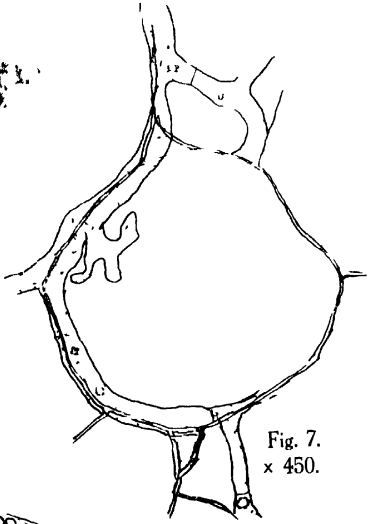


Fig. 7. x 450.

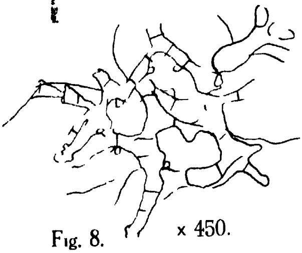


Fig. 8. x 450.

A

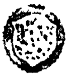


Fig. 11.

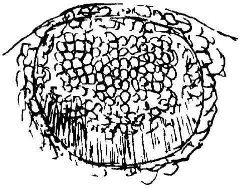
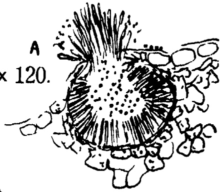


Fig. 9. x 120.

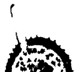
Fig. 10.

B x 450.



A x 120.

B



x 450.

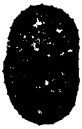
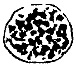
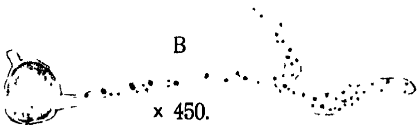


Fig. 12 x 450



A

Fig. 13.



B x 450.

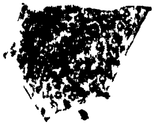


Fig. 14. x 3.

Rust on Launaea aspleniifolia.

5. NUMISMATIC SUPPLEMENT NO. XXX.

***Note.*—The numeration of the articles below is continued from p. 178 of the "Journal and Proceedings" for 1917.**

187. TWO RARE SĀSĀNIAN DRACHMES.

Hormazd II the eighth Sāsānian monarch, was the son of Narses (293—303 A.C.), and reigned from 303 to 310.

On his coins we find one or other of the epithets *bagi* 'divinity," or *vōhīā* 'excellent" preceding his name; but on this drachme neither of them appears. Also its weight of 68 grains is very high.

Description of the Drachme.

Metal.—Silver. Diameter. —1″ Weight.—68 grains.

Obverse. – Bust of king to right, wearing a pearl-beaded crown, in the form of an eagle with a pearl dropping from its beak, from which depend the flowing Sāsānian fillets, and surmounted by the traditional globe studded with pearls. The hair is brought back and arranged in flowing curls, and the carefully dressed beard terminates in a point. The bust is fully clothed, a pearl drop in the ear and a pearl necklace with a jewelled clasp in front. Grènetis

Legend.— *Mazdayasn Aūharmazdī malkān* (*malkā, Aīrān* (*va-Anīrān*) *minō-chitrī* (*min yazdān*) "Mazda-worshipping Hormazd, (king) of the kings of Aīrān (and Anīrān), of spiritual origin (from the sacred beings)."

Reverse.– The holy *pyreum*, with the *frōhar* turned to left issuing from it on an altar adorned with bands, having the king to the left, with his appropriate eagle tiara, surmounted by the usual globe holding his sword upright, and dressed as a pontiff fulfilling the functions of a *mōbed*; and on the right, assisted by the *hērbet* wearing a mural crown and flowing robe, holding his sword also erect; both facing the holy *pyreum*. A dot on the base of the altar. Grènetis.

Legend.—There are strokes instead of the legend on the right and left of the piece.

II.

Kobād I died, eighty-two years old, 13th September 531 and was succeeded by his destined heir, Khusrau (Chosroes) surnamed Anōsharvān, " the Blessed," whom his father is said to have caused to be crowned as he lay on his death-bed. Khusrau I was a great king, and deserved the title of " the Just." He died in February 579.

The interesting peculiarity of his drachme described below is that the regnal year is inscribed in Pahlavī *chehār* (4) instead of the Semitic *arbā*. On Sāsānian coins the numerals (written in words) indicating the regnal years, from two to ten, are all Semitic; but one, and from eleven upwards, are all Pahlavī. In the extreme east of the empire and far from the Semitic influence coins were struck at Merv in the regnal year four of Khusrau I, with the numeral written in Pahlavī *chehār* a very unusual occurrence. Up till now only two specimens are known, the one in the Bartholomaei collection (pl. XXII, fig. 6) with the name of the king *Khūsrūī* on the obverse, and another in the cabinet of Mordtmann (Z.D.M.G., 1880, p. 120) but without any legend on the obverse. Now my coin has only one letter *ū*, the second letter of the name *Khusruī*, on the obverse. All these three drachmes are of the mint-city of Merv; but it is important to note that none of them are from the same dies.

Coins are known to have issued from this important mint in no less than 78 different years. Its monogram appears first under Yezdegerd II (438-457), and again under Firōz I in 459 and 462 and Jāmāsp in 498. It showed its greatest activity from 515 to 629, and struck for the last time under the Sāsanians in 651, the last year of Yezdegerd III. All authorities agree in identifying the mint-monogram MR with Merv.

Description of the Second Drachme.

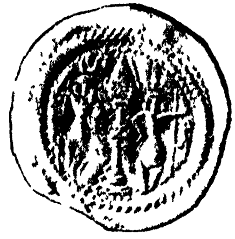
Metal.—Silver. Diameter.—1·1″. Weight.—58 grains

Obverse.—Bust of king to right, wearing a crown surmounted by a crescent with the globe standing in it. The hair is brought back and arranged in curls. Over each shoulder, a crescent and a fillet floating. In the field in front of the crown a crescent and star, and behind it, a star. On the margin to the left and right, and at the base of the piece, a crescent. Grènetis.

Legend.—*(Kh)ū(srūī)* in front of the face.

Reverse.—The holy *pyreum* on an altar, having a personage on each side, facing front with one hand on a pole and the other on a sword. To the left of the *pyreum*, a star; and to the right, a crescent. Grènetis.

Legend.—To the left, *Chehā(r)* " four"; and to the right, the mint-monogram MR " Merv."



FURDOONJEE D. J. PARUCK.

24th March, 1917.

188. A CORRECTION NOTE.

In my article No. 174 on "A Gold Coin of the Sasanian King Shāpūr the Great," published in the Numismatic Supplement No XXVIII, some of the statements need adjusting in the light of the latest research, and I beg leave to correct them.

The statement "On the death of Hormazd II (310 A.C.) his natural heir was set aside by the nobles...." requires correction. Hormazd II was succeeded early in 310 A.C. by his son Adharnarseh, who was soon deposed, and probably slain, ostensibly for his cruelty. The nobles now held the reins of power, and having blinded one brother of the fallen king and imprisoned another (Hormazd), crowned Shāpūr II, the new born (or unborn) son of Queen Ifra-Hormazd (310 A.C.). This queen was a Jewess.

The transliteration and translation of the inscription A of Taq-i Bostān were given after Mordtmann (Z.D.M.G., 1880, p. 66) and Drouin (Les légendes des monnaies sassanides, p. 27), but from West (see Grundriss der Iranischen Philologie vol. II, p. 77 sq., where are given the transliteration and translation of the opening lines of some of the rock inscriptions), the greatest acknowledged authority on Pahlavī, I find that they should be corrected as follows :—

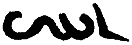
Mazdayasn vōhūā Shahpūhrī malkān malkā Aīrān va-Anīrān minō-chitrī min yazdān bareh Mazdayasn vōhūā Aūharmazdī ....napī vōhūā Narsehī malkān malkā, "Mazda-worshipping excellent Shāpūr, king of the kings of Erān and non-Erān, of spiritual origin from the sacred beings son of Mazda-worshipping excellent Hormazd.........., grandson of excellent Narses, king of the kings."

I inadvertently omitted the mention by Mordtmann (Z.D.M.G., 1880, p. 64, no. 263) of a gold coin of Shāpūr II similar to mine, but with a slight difference in that instead of a succession of dots, it bears a succession of small semicircles on the obverse.

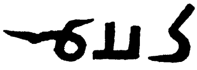
To the 23 known gold coins of this king should be added two published in 1889 by De Markoff in his Catalogue of Sāsānian coins (p. 65, no 32; and p. 66, no. 33).

I will take this opportunity to indicate a slip in my critical note No. 183 in the same supplement on the drachme of Bistām. The epithet *fīrōc̲h̲* on the obverse of the coins of Bistām and Kobād II is written *fīrōc̲h̲ū* and not *fīrōc̲h̲ī*. The final *ū* is redundant as we find it also in the names *Kavātu and Bōrānū* on the obverse of the coins of Kobād II and Bōrān respectively. (For further comment on this redundant *ū*, see my article No. 173 on ΑΡΔΟΧÞΟ in the same supplement.)

In order to facilitate the comparison of the mint-monograms *nīhc̲h̲* and *rām* mentioned in my note No. 170 on the drachme of Queen Bōrān in the same supplement, I give these facsimiles below. Apparently they were overlooked by an error in the press, and as they are of some importance I now repeat them.



Nīhc̲h̲.



Rām.

FURDOONJEE D. J. PARUCK

23rd May, 1917.

189. THE RARE SĀSĀNIAN MINT KVI BBA OR KVN BBA.

During the reign of Bahrām IV Kirmanshāh (388-399 A.C.), son of Shāpūr II Zu'laktāf (310-379 A.C.), there appeared on the reverse of his coins the mint-monogram KVI BBA or KVN BBA, which is not met with on the coins of any of the other Sāsānian monarchs. The mint-monogram is composed of a few Pahlavī letters forming the commencement of the name of a place where the coin was struck. Two drachmes are in the Bartholomaei collection (pl. X, figs. 12 and 13), four are in the cabinet of Mordtmann (Z.D.M.G., 1854, p. 59, no. 106; 1880, p. 82, no 355), and this one of mine makes a total of seven drachmes known of this king issued from this rare mint.[1]

Mordtmann translates it by "the royal residence," that is to say, Ctesiphon, an interpretation with which Drouin (Les légendes des monnaies sassanides, 1898, p. 30) seems to concur. De Morgan (Revue Numismatique, 1913, p. 181) on the authority of Haug (An Old Pahlavī-Pazand Glossary, 1870, p. 92) translates it by "the gate of the royal residence"; but he does not think that we can say with authority whether KVI BBA possessed a local value, or whether it applied to all the places where the Court of Persia found itself and issued coins.

---

[1] In his earlier publication Mordtmann was unable to read the first part of the mint-monogram, though the reproduction (pl. II, no. 14) is quite clear.

Drouin reads the mint-monogram *kavī babā* on the two specimens of the Bartholomaei collection, and remarks that the reading appears to be certainly good. De Morgan gives the same reading; but Mordtmann differs by giving it KVN BBA *kavan babā*. He says that the letters KVN are very distinct on the specimens in his possession, and that the transcription in the illustration of the Bartholomaei collection is doubtful. He believes that it is from the Zand word *kava* "king" that *kavan* "royal" is derived. Drouin says that it is for the first time we find on the coins the word *kavī*, which corresponds to the Zand *kava* "king"; and that the word remains in *dirafsh-i kaviyani* or *kavān-i dirafsh* "the standard of the kings." Here Drouin is evidently at fault because *dirafsh-i kāviyān*, the venerable sacred banner of the Persian empire which was taken by the Arabs at the battle of Kādisīya, was named after the black smith Kave who raised the standard of revolt against the tyrant Dahak (see Nöldeke, Tabari, p 278). The Pahlavī word *kavī* corresponds to كي (pronounced *kaī*) in modern Persian, the other word in Pahlavī being *kaī*. The Persian dictionary *Burhān-i Qāti* says that *kaī* signified formerly "king of kings," and corresponds to the Arabic expression *malik al malūk*. The meaning of *babā* is "a gate, the residence the capital," and corresponds to the Arabic word باب. The specimen in my cabinet, illustrated in this article, supports Mordtmann's reading, but I differ from him in his reading on the Bartholomaei specimens, and am of the same opinion as Drouin. So that even in these seven specimens known there are two distinct readings, two with KVI BBA, and five with KVN BBA.

I would suggest that the word *kavī* or *kavan* "royal" applies to the fire because we find the word *malkai* "royal" round about the fire on the gold coins of Narses (293-303) (see Mordtmann, in Z.D.M.G., 1880, p. 43, no. 138); Hormazd II (303-310) (see Drouin, in Revue Numismatique, 1896, p. 162 sq.; and Cunningham, in Numismatic Chronicle 1893, p. 170, and pl. XIII, fig. 2); and Shāpūr II (310-379) (see the Bartholomaei collection, pl VII, fig. 9; Mordtmann, *op. cit.*, p. 61, no. 242; and Indian Museum Catalogue, vol. I., pl. XXIV, fig. 6); the Aramaic *malkai* being replaced by the Pahlavī *kavī* or Zand *kavan* in the same way as the Aramaic *nūrā* "fire" found on the reverse of the coins of the early Sāsānian kings was replaced later on by its equivalent *ātūr*, the true Avestic word for designating fire. But the suggestion has to be negatived on consideration that the mint-monograms first appeared on the reverse of the coins of Bahrām IV, inscribed on the right or left or on both sides of the fire on the altar, and continued to appear in the same manner on those of his successors Yezdegerd I (399-420) and Bahrām V (420-438). It was during the reign of Yezdegerd II (438-457) that the monogram passed into the field on the right, and this usage became definite till the end of the dynasty, and was subsequently copied on the Arab drachmes.

It is curious to note that another mint-monogram BBA, which is the second part of the mint-monogram under discussion, first appeared during the reign of the same king on the reverse of his coins, and then on those of his successors till Firōz I (459-484). It is not met with on the coins of Balāsh (484-488); but it reappears in the first reign (488-497) of Kobad I. It is found during the days of Jamasp (497-499) in 497 and 498, then it disappeared till the sixth year (536) of Khusrau I (531-579), and again appeared during the same reign in 557 only to vanish again. It was not till 591, at the commencement of the reign of Khusrau II (590-628), that the activity of this mint manifests itself continuously up to 636, because we find this monogram on the drachmes of all the years. It is found for the last time in 651, the year of the death of Yezdegerd III (632-651), the last monarch of the Sāsānian dynasty.

Thomas (J.R.A.S., 1850, p 327), supporting himself on the fact that the mint-monogram BBA figures on the drachmes of Selim and of his envoy Abdullah Azim, is tempted to believe that it indicates a town of Khorāsīn, perhaps Nīshāpūr. Later on he (J.R.A.S. 1852, p. 390 sq.) considers that the name responds simply to a suburb of Merv. Mordtmann (Z.D.M.G., 1854, p. 12) after some hesitation proposes مداین Madaïn or طیسفون Ctesiphon, and again he (Z.D.M.G., 1865, p. 396) reconciles it with الباب Al Bāb, the town of Tabaristān or Bebān, after Thomas, a district of Merv. Finally he (Z.D.M.G., 1879, p. 114 sq., no. 2) believes that it indicates "the Capital, the Residence."

Perhaps BBA and KVI BBA or KVN BBA were the honorific epithets applied for the most part to Erānian cities possessing an آیوان "royal palace": but Ctesiphon was not the only place thus honoured. According to De Morgan, we cannot take for granted the hypothesis that these were the honorific epithets of a particular city, because in 67 A.H. the Arabs have inscribed on their drachmes after the Sāsānian type the mint-monogram BBA "the gate." This was about forty years after the death of the last Sāsānian king, and the K͟halifs would certainly not have recalled the old regime if BBA had signified "the Persian Gate." De Morgan's argument that the K͟halifs would not have recalled the old regime does not seem to me to be strong, because the drachmes are after the Sasānian type, having on the reverse the fire altar albeit contrary to their newly founded religion.

On the later Arab drachmes we find a mint figuring in all its letters الباب Al Bāb, which may perhaps be the city indicated by the monogram BBA: because باب is the Arabic equivalent of the Pahlavī word *babā*. Ctesiphon should be rejected because towards the close of the year 636 or in 637 the battle of Kādisīya virtually decided the fate of the Tigris valley, and in 638 the Arabs crossed the Tigris and fell on Ctesiphon. But the monogram BBA figures in 651 on the drachmes of Yezdegerd III.

I think De Morgan is right when he remarks that the honorific epithet BBA was attached to one of the towns in the extreme east of the empire which perhaps had struck under another monogram, Merv, Balkh, Nīshapūr and other great cities of the districts which appertained to the king of Persia in the year of his death. Unfortunately we do not possess any indication of a definite nature for our guide as to the choice of the city or cities which carried these honorific epithets.

Description of the Drachme

Metal—Silver. *Weight*—63 grains.
Size—1″. *Mint*—KVN BBA.

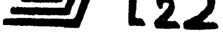
Obverse.—The bust of king to right, wearing a crown adorned with wings and surmounted by the traditional globe. The hair is brought back and arranged in curls, with a fillet floating behind. Grènetis.

Legend.—*Mazdayasan Varahrān malkā*. "Mazda-worshipping Bahrām, king."

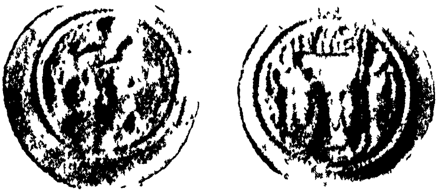
Reverse.—The holy *pyreum* on an altar adorned with bands, having on the sides two personages holding their swords upright, and fillets floating from their tiaras. Grènetis.

Legend.—On the sides, *Ātu(r) Varah (rān)*, "the fire of Bahrām," that is to say, the fire consecrated by the king Bahrām; on the altar-shaft, *rāst* "just"; and to the right of the fire, KVN (*kavan*), "royal" and left, BBA (*babā*), the residence, the capital," that is to say "the royal capital."

I reproduce the enlarged facsimile of the mint-monogram only so that it can be compared with that on the drachmes of the Bartholomaei collection:—



KVN ·BBA.



FURDOONJEE D. J. PARUCK.

25th May, 1917.

I.

190. AN UNPUBLISHED MINT OF AURANGZĒB.

Mint.—Nasīrābad
Metal.—Silver.
Size.—·85 in. : 21 mm., round.
Weight—11 45 grms. 176 grains
Date R.Y 34
Provenance unknown

Obr	*Rev.*
عالم گیر	جلوس
اورنگ زیب	میمنت
سـ ـــ ـــ ـاه	مانو ۳۴ س
زد چو بدر منیر	ضرب
سـ ـــ ـــ سکه	نصیراباد
در جهان	

This is a very interesting coin, and I know of no other coins of Aurangzeb with the regnal year between the س and و of the word مانوس. This points to its being an unpublished coin. I consulted Mr. W. E. M. Campbell, Secretary, Coin Committee, U.P., and he agrees with my reading of the mint.

The place Nasirābād where this coin was minted was apparently included in the Province of Khāndesh. It is still in existence as a small town on the Pênganga River, near Bhusāwal. Importance was probably given to it only during the last year of Emperor Shāh Jahān's reign as appears from the following extract from Muntakhib-ul-lubāb, by Khāfi Khān, vol. I, page 717 :--

ذکر سوانح سال بست و هفتم از جلوس صاحب قرانِ ثاني مطابق
سنه هزار و شصت و سه هجري *

میر احمد ولد سیادت خان را بخطاب میر احمد خان و فوجداري
نصیراباد وعیره نوابع خاندبس مرخص ساختند *

Translation.

' Account of an event which occurred in the 27th regnal year of Sāhib Qirin-ṣānī (Shāh Jahān) coinciding with the year 1063 A.H

" Mīr Ahmad son of Siyādat Khān was honoured with the title of Mīr Ahmad Khān and entrusted with the Faujdarī of Nasīrābād and other places in Khāndesh."

During the reign of Aurangzeb, the city of Nasīrabad appears to have retained its importance and remained attached to the Province of Khāndesh as will appear from the following quotation from Maasir-ul-umra by Nawāb Samsam-ud-daulāh, vol. I, page 531 :—

و دستور جلال کاکر حسب الحکم سلطان اورنگ زیب بهادر بفوجداري
و تیول داري نصیراباد وعیره نوابع صوبهٔ خاندیس سربلند گردید *

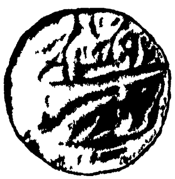
Translation.

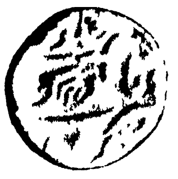
"And subsequently Jalal Kakar was appointed to be the Faujdār and Tuyūldar of Nasirabād, etc. in the Province of Khāndesh under the orders of Sultān Aurangzeb Bahadur."

M. A. SUBOOR.

NOTE.—The coin is in bad preservation and it is somewhat doubtful whether the mint name is sufficiently clear to warrant the acceptance of an addition to the list of mint-towns of Aurangzeb. The type is new, but the reading which obviously suggests itself is Nusratābād and there seems hardly room for the 'ي' between the 'ص' and the 'ر'. Nusratābād is a known mint and Mr. Whitehead published a coin struck at that place in the year 1114-47, though of a different type [P. M. C. No. 1945].

H. NEVILL.





II.

191 THE LAKHNAU MINT ON A GOLD COIN OF AURANGZEB.

Mint.—Lakhnau.
Metal.—Gold.
Size.—18·6 mm.; ·75 in; round.
Weight.—10·96 grms. = 169 grains.
Date.—1082-14.
Provenance unknown .

Obv.	*Rev.*
عالم گیر	مانوس
اورنگ زیب	میمنت
ش———اه	۱۴
زد چو مهر منیر	سنه جلوس
س———که	ب
۱۰۸۲	ضر لکهنؤ
در جهان	

So far the only known gold coin of the Lakhnau mint belongs to the reign of Shāh Jahān. It was described by Mr. H. Nelson Wright on page 246 of the Numismatic Supplement No. XXV

I have now discovered in the collection of the Central Museum, Nagpur, a gold piece of Aurangzeb's reign minted at Lakhnau and am accordingly glad to publish this latest addition to the list of gold coins of that mint

M. A Suboor

192. A RARE TYPE OF DRACHME OF SHĀPŪR II

While the Sāsānian coins follow more or less fixed types, they exhibit a pronounced variety of legends, the study of which is a matter of continual interest. The coins of S̲h̲āpūr II (310-379), apart from sub-varieties, are of three main types. In the first of these we have the fire-altar with two attendants; in the second we see the altar similarly attended but with the addition of the *frōhar* issuing from the fire; and in the third the fire-altar is similar to that depicted on the coins of Ardes̲h̲īr I, having no attendant personages and filling almost the whole flan. The last type, of which coins are known in gold, silver and copper, is considered to be very rare; to it belong the gold piece described in the Numismatic Supplement No. XXVIII, article no. 174 and the drachme, which is the subject of this article.

The main legend on the reverse of the coins of S̲h̲āpūr II is *Nurā zī S̲h̲ahpūhrī* "The fire of S̲h̲āpūr." Though there are some specimens known of the early kings on the reverse of which the Aramaic word *nūrā* is replaced by its equivalent *ātūr*, the true Avestic word for designating fire, I have not discovered any recorded instance of a coin of S̲h̲āpūr II on which the word *ātur* is so found. From S̲h̲āpūr III (383-388) the word *nūrā* is finally replaced by its equivalent *ātūr* on the reverse of the coins.

The drachme described below has on the reverse the legend *Atūr-ī S̲h̲ahpuhrī*. Unfortunately the word *ātūr-ī* is damaged, but the first two letters are very distinct and the rest are traceable without difficulty. On the strength of this reading I have been able to read on the reverse of a similar drachme of this king in the Bartholomaei collection (pl. VII, fig. 7) the legend *Atūrī zī S̲h̲ahpūhrī*. This drachme was described by Mordtmann (Z.D.M.G., 1880, p. 65, no. 265), but he was unable to read the legend on the reverse beyond the name of the king. He pronounced the legend on the obverse to be illegible, a remark which must apply unfortunately to my specimen as well. The meaning of both reverse legends is the same, "The fire of S̲h̲āpūr." To express the possessive use has been made of the letter *ī*, the Persian *izāfat*, in one case while in the other we have the Semitic particle *zī*, which is often employed in Sāsānian Pahlavī in the same sense. The relative *zī* is here seen approximating in use to the Persian *izāfat*, of which possibly it was the origin. But the letter *ī* preceding the word *zī* is redundant, being the vowel so frequently found at the end of Pahlavī words as may be noticed at the end of the name of the king *S̲h̲ahpūhrī*.

In connection with this legend I take the opportunity to rectify another reading of Mordtmann. He (*op. cit.*, p. 38, no. 128) read on the reverse of a drachme of Bahrām II (276-293) in this cabinet, the words *Varahran-Atruni* and (*op. cit.*, p. 48, no. 160) on the reverse of a drachme of Hormazd II (303-310) in the Bartholomaei collection (pl. VI, fig. 5) *Ohramaz-Atruni* "Hormazd the fire-worshipper." This reading *ātrūnī* is very doubtful, for we have only to examine the illustration of the Bartholomaei specimen to see that the legend might easily be read *Ātūr zī Aūharmaz(dī)* "The fire of Hormazd." The fifth letter is unquestionably *z* and not *n*, as may be proved by comparing these letters in the words *nūrā zī* found on the reverse of the coins on the same plate; and as for the letters *ū* and *r*, one letter served for both in the Pahlavī of that period, a fact clearly demonstrated on the same plate in the word *nūrā*.

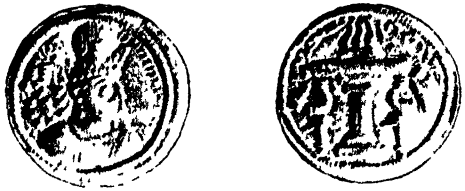
Description of the drachme.

Metal.—Silver. *Size.*—·9″. *Weight.*—49·5 grains.

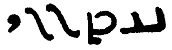
Obverse.—The bust of king to right, wearing a mural crown with three points embattled, surmounted by the traditional globe, with the fillets of the diadem floating behind the head. The hair is brought back and arranged in flowing curls. A moustache and a short curly beard, an earring and a necklace of pearls with jewels in front. Bust clothed in dress. In front of the face an illegible legend. The whole device enclosed in a grènetis.

Reverse.—A broad-topped altar on two-stepped pedestal containing the holy *pyræum*, without attendants, as on coins of Ardeshīr I. Grènetis.

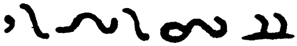
Legend.—On the right of the fire, reading from the outside of the piece *Atūr-ī* "The fire of"; and on the left reading from the inside *Shahpūhrī* "Shāpūr."



FURDOONJEE D. J PARUCK



Atūr-ī



Shahpuhrī

193. SOME REMARKS ON MR. HODIVALA'S ARTICLES ON CERTAIN MUGHAL MINTS.

Mr. Hodivala in his recent articles had shed a good deal of new light on Mughal numismatics by his recent articles. The following remarks are only intended to show how far, in my opinion, the coins themselves corroborate or in some cases appear to modify some of his statements.

(1) *On the Bijāpūr Rupees of* 1901 *A.H.* (*art. no* 167, *N.S. XXVII*)

The rupees of Aurangzeb struck at Bijāpūr corroborate the evidence adduced by Mr. Hodivala in two ways. The early issues of 1091-23 and 1091-24 (I know of none of the immediately succeeding years) have the mint-name without epithet. The later rupees, the earliest date for which as far as I know is the 31st year (no. 1637 in P.M.C. on which the *hijri* date is missing), have the epithet Dāru-ẓ-ẓafar 'the Seat of Victory.' Further the earliest type of Bijāpūr rupee of 1091-23, of which there is a specimen in the Lucknow Museum, as well as a half rupee I believe in the collection of Mr. H. N. Wright, has the very curious reading مجلوس for جلوس. This was probably a slip on the part of the Bījāpūrī die-cutter, as the rupees of 1091-24 have the ordinary جلوس.

(2) *Rupees of the Gulkanda Mint* (*art. no.* 168, *N.S. XXVII*).

I do not think that a study of the Gulkanda coins of S̲h̲āh Jahān helps greatly to settle the date, nor do I think much weight can be attached to the supposed date on the I.M specimen: for it might just as well be an attempt to reproduce an ornament. The following facts and conjectures are derivable :—

(1) Their style suggests an early date.
(2) From the style also it is obvious that no coins of the Imperial pattern have come to light as yet.
(3) The small numbers extant suggest a limited issue.

I think it at least possible that the 'coin legend engraved and sent from the Court' may have been on a coin of another mint.

In connection with the Gulkanda mint it may be interesting to notice the issues of Aurangzeb between the years 1069-1 and 1098-31. One or two mohurs are known, but rupees are very common; and all until 1098 are of very crude design.

The first issue of 1069-aḥd has a peculiar obverse.

بادشاه غازے
بهادر عالم گیر
۱۰۶۹
زیب
محمد اورنگ

The reverse is of the ordinary design with the mint-name at the top.

The next date known to me is 1071-4. This has the common obverse type of Aurangzeb with the date to left of جہان : the reverse is of the ordinary type with the mint-name at the bottom.

The *hijri* date 1071 is now continued on the obverse till 1071-7, when it is replaced by 1076, which continues certainly to the 23rd year. On coins from the 24th to the 30th year the *hijri* date is missing: at least I have never come across a coin in which it could be read.

In 1098-31R, the year of Aurangzeb's conquest, rupees and mohurs of quite a different style were struck. Both metals are represented in the British Museum, nos. 712 and 778. They were obviously struck by Imperial die-cutters, and are some of the finest examples of his coinage: they follow the type of the preceding coins except that the date is in the top line The mint was then closed and moved to Ḥaidarābād, since we find the earliest coins of the latter mint issuing in the following year 1099 (cf. P.M.C. no. 1680).

Synopsis of Coins of the Gulkanda Mint.

AV and AR of similar design: examples of both known of all types. No Æ known.

Emperor.	*Date.*	*Remarks.*
Shāh Jahān I.	—	Early type Kalima in 3 lines with mint below on obverse. Issued in 1045 ? by Abd-ullah Quṭb Shāh.
Aurangzeb.	(1) 1069-ahd.	Mint name at top of reverse: *hijri* date to left of جہان on obverse. A Quṭb Shāhī issue.
	(2) 1071-4R—1071-7R.	,, ,, But mint-name in bottom line of reverse.
	[1](3) 1076-8R—1076-23R.	,, ,,
	(4) —24R——30R.	,, ,, No *hijri* date yet deciphered
	(5) 1098—31R.	Imperial issue Same type as above but *hijri* date in top line of obverse.
	1099 A.H.	Mint removed to Ḥaidarābād (Dāru-l-jihād)

(3) *The Srīnagar Mint* (*art. no.* 177, *N.S. XXVIII*).

Mr. Hodivala has substantiated what I and most Indian numismatists have held as most probable for a considerable time. Mr. Whitehead, for instance, in his Catalogue of the

---

[1] In the B.M. there is a ¼ rupee of—15R (no. 749) and a ⅛ rupee of 1076-21 (no. 755).

Lahore Mug̲h̲al Coins, treats the Srīnagar coins under 'Kashmir,' although he admits an alternative locality (P.M C. XCVI). It is notorious that the provenance of coins as evidence of locality is in general unsatisfactory; but I think the following facts do help to support Mr. Hodivala's contention. I have five times visited the Srīnagar (Kas̲h̲mīr) bazaar and each time I have acquired specimens of Akbar's Srīnagar dāms, associated usually with Muḥammad's fulūs of Kas̲h̲mīr. The only other place where I have obtained these dāms, which are not common, is Rawalpindi.

(4) *The A'ẓamnagar Mint* (*art. no.* 179, *N.S XXVIII*)

The coins of four Emperors of this mint have been published: (1) Aurangzeb, N.S. XV, § 89, no. 10; (S̲h̲āh 'Alam Bahadur, N.S. XXII, § 130, no. 1; (3) Farruk̲h̲siyar, N.S. XXII § 130, no. 3 and N.S. XIV, § 84, fig. II; (4) Muḥammad S̲h̲āh, P.M.C no. 2363.

Although three of these are assigned by Mr. Whitehead in his Mint List (including the Supplement) to A'ẓamnagar and two to A'ẓamnagar Gokulgaṛh (the B.M. specimen no. 936 of Farrukhsiyar is assigned to the former, and that of Dr Taylor to the latter), I think that in every case the second name occurs in the last line whether visible on the particular coin or not.

Mr. Hodivāla's reading of Gokāk for the Kām Bak̲h̲sh coin (N.S. XIV, pl 86, Fig. 11) formerly read as Gokulgaṛh is further confirmed by the duplicate specimen in the Lucknow Museum, which I have examined.

The question now remains whether the word in the last line of the A'ẓamnagar coins can also read Gokāk. On the Aurangzeb coin the word is undecipherable. I think the Farruk̲h̲siyar coins might very reasonably give this reading, though in the specimen reproduced in my article in N.S. XXII the ک seems to be blundered. The S̲h̲āh 'Alam Bahādur coin presents a serious difficulty, but a comparison between this and the coin of Muḥammad in the Lahore Museum Catalogue shows somewhat similar lettering and in the former it is possible that the up-stroke of the first 'Kāf' may have become lost in the long ب of ضرب. I think therefore that Gokāk is a very probable reading for the A'ẓamnagar coins.

C. J. Brown

6. The Rauẓat-uṭ-Ṭāhirīn.

By H. Beveridge, I.C.S. (*retired*).

This is a general history and one which is said[1] to be greatly admired in the East. It begins with Adam and goes down to the beginning of the 17th Century, and nearly to the death of Akbar. If we take its accounts of the early times of Persia and India as historical, it commences at a much earlier period than the birth of Adam. The book was written by Ṭāhir Muḥammed s. 'Imādu-dīn-Ḥasan of Sabzwār in Persia. He was in Akbar's service and began to write his history in 1011 A.H. 1602-3. He is the Kwājagī Ṭāhir of the Akbarnāma III, 423, Bib. Ind. edition, who carried a message to the Khān Khānān Abdu-r-Raḥīm. This was in the 28th year, 992 (A.D. 1584).

The word Rauẓat, when read without the *tā*, is a chronogram of the commencement of the work, for it yields by *abjad* the date 1011, viz. *rā* 200, *wā* 6, *ẓād* 800, and *ha* 5, and the whole title Rauẓat-uṭ-Ṭāhirīn may be rendered as the "Garden of the Pure." Perhaps the author also intended that it might convey the meaning of "Ṭāhir's Monument." The work is noticed in Elliot and Dowson's History of India, VI 195 (Sir Henry Elliot's Bibliographical Index to the Historians of Muh. India Calcutta 1849, should also be consulted). It contains extracts in Persian from the Rauẓat See Chapter XXVI, p. 298, also in Rieu's Catalogue of Persian MSS. in the British Museum, Vol. I 119, and in Ethé's Catalogue of the Bodleian Persian MSS There is also, as Rieu has pointed out, a short notice in the St. Petersburgh (now Petrograd) publication, the Mélanges Asiatiques V. 119. This is by M. Veliaminof-Zernof, who obtained his copy at Orenburgh. It originally appeared in the Bulletin, and is dated April 1864. The Rauẓat is not a common manuscript, and owing to its great size, few, if any, copies are complete. Fraehn included it among the desiderata in his Indications Bibliographiques.

The B.M. copy is Or. 168, and contains 700 large folios. On folio 14*b* the date given is 1046, and on folio 583^a the date is 1045 (1635-6). There is also in B.M. MS., Add. 6541 an extract which contains the preface (wanting in Or. 168), and the elaborate table of contents It is quite a modern extract, being dated Masulipatam 1783. There is also, as Rieu has mentioned in his Additions and Corrections, Cat. Vol. III, p. 1080, a MS Vol. of extracts which contains the chapter on the Islands of Bengal, which is wanting in other copies. The MS. is Or. 1762, and the pages are 175-190. Other copies are noticed in Elliott and Dowson, I.O. page 197, and I have a copy which I obtained in India some sixteen years ago.[1] It is a large volume of 198 folios and is in various handwritings, some parts in Shikast and some in Nastaliq. The folios were disarranged and the whole MS. is much dilapidated It wants the preface and the table of contents, and several chapters are missing. It probably belongs to the 17th Century. There is no name of any copyist. The folios are 13 by 7 inches and are longer than those of the B.M. Or. 168, there being 33 lines against the 21 of the B.M. copy. The number of words in each line is about the same in both. It had been carefully patched in India by a former owner, but this has not prevented the disarrangement. Thus (before rearrangement) it began with an account of the four yugs of the Hindus though this really belongs to division (qism) 4 of the work, and appears at p. 426 of the B.M. copy. The earliest page of the work, as it exists in my copy is marked 38, and corresponds to p. 49^a (last line) of Or. 168. It relates to the last occurrences of the reign of Ẕohāk. Thus, my copy wants the few pages descriptive of the patriarchs, and 34 or 35 pages of the early history of Persia, that is, of the history of Persia from its first king, Kaiomurs̤ down to the conquest by the Arabs. On the other hand, the chapter is, with the exception just noticed, very full in my copy, and occupies 125 folios (38 to 162) There are many lacunae and some undecipherable pages, but still it is the best preserved portion of the MS. This is fortunate, for, with the exception of the quotations, with comments and variations, from Bābur's Memoirs, which occur in the Chapter about Sultan Ḥusain of Herat, this early Persian history is, I think, the most valuable part of the Rauẕat. For it is not merely a prose rendering of Firdausī's Shāhnāma; much of it is taken from a rarer work, the Garshāspnāma, which is supposed to be by Firdausī's teacher, Asadī (perhaps the Asadī the 2nd, who was the son of Asadi the 1st). There are in it lengthy accounts of Garshāsp's (or Karshāsp) victories in Ceylon and Africa, and of the sayings and doings of the Shāhs of Kabul. The first line of my copy, formerly marked folio 38, and now marked 1, and which corresponds to the last line of folio 49 of the B.M., is a portion of the resolutions and counsels of a Shāh of Kabul whom the B.M. copy calls Alwāj Shāh Nöldeke regards the Garshāspnāma—which records the exploits of Garshāsp, who was of Sīstān, and an ancestor of Zāl and

---

[1] Apparently this rests on Major Stewart's authority. See his Catalogue of Tippu Sultan's Library.

---

[1] There is a copy of the Rauẕat T. in the Bodleian. It was sold to Sir Gore Ouseley by Captain Dow in 1765, and is now among the Ouseley MSS. I have not been able to examine it, but my friend, Mr. Vincent Smith, tells me that it is a fine MS. and is a thick folio and well bound in calf.

Rustum—as pure fiction, but it seems that this was not Mohl's opinion, and may we not hold that at least the names of the Kabul Shāhs are historical ?

Ṭāhir states that he is indebted for this part of his book to Maulānā Taqīu-d-dīn of Shushtar, who rendered the Shāhnāma (in which name the Garshāspnāma seems included) into prose at the request of Akbar. (See Badayūnī III, 206, and Ṭabaqāt, A, p. 404, Newal K. lithograph). Badayūnī speaks of Ṭaqī as a new servant of Akbar and as having recently turned the Shāhnāma into prose, and as having thereby made silk into cotton. (The Shāhnāma was one of the works that used to be read out to Akbar). Ṭaqī was a great friend of Ṭāhir, and when he lost heart and gave up the work on Akbar's death, he begged his friend Ṭāhir (as I understand the passage) to arrange his papers and to continue the translation. This mention of Akbar as ordering a prose translation of the Shāhnāma is an interesting fact which Abul Faẓl does not mention in the Ayīn.

The chapter also contains a prose rendering by the author of the Bahmannāma which, according to him, was written by Maulāna Mas'aūd Majdūd, a sister's son of Firdausī. Bahman was a king of the Kaiyānīān dynasty and was the son of Isfandiyār, and the grandson of Gashtāsp. He is known by the name of Ardishir Darāzdast, the Artaxerxes Longimanus of the Latins, and is supposed to be the Ahasuerus of the Bible. Rieu states that the Bahmannāma was written about 495 A.H. or A.D. 1102, ten years after the death of Malik Shah. (See the Supplement to Rieu's Catalogue of Persian MSS. for accounts of copies of the Garshāspnāma and the Bahmannāma). It is noticeable that Ṭāhir in the first part of his work calls himself the son of Sultan 'Al'i S. Hājī Muḥ Aḥmad Hasan 'Imādu-d-dīn ; elsewhere he calls himself the son of 'Imādu-d-dīn. (See his abstract of the Mahābhārat). A fly-leaf in my copy also calls the author the son of 'Imādu-d-dīn Sabzwārī, and another note on the same fly-leaf calls the Rauẓat " Sair Haft Iqlīm " ! Possibly two Ṭāhirs were concerned with the authorship of the Rauẓat, just as two Asadīs are said to have had to do with the Garshāspnāma.

The Rauẓat has five *Qisms*, or Divisions, and these are subdivided into Chapters, *bāb*, and sub-chapters, *faṣl*. There are also smaller subdivisions such as *firq* and *ṭabaqāt*. The contents of all the *qisms*, *bābs*, and *faṣls* are accurately stated in Rieu's monumental Catalogue, Vol. I. But there is a clerical error in the number of the first page of the early history of Persia. It should be 15^b or 16^b and not 166. The three main subdivisions of *qism* one are : 1st, Patriarchs and prophets ; 2nd, the history of Persia from the earliest times down to the Muḥammadan Conquest (the chapter ends with the putting to death with torture of Mahavi Sūrī, the Governor of Sīstan, who betrayed Yazdejird) ; 3rd, the history of the kings of Arabia.

The chapter on the patriarchs and prophets is very short, and is wanting in my copy. It also wants the preface and the elaborate table of contents, and the history of the kings of Arabia. As elsewhere stated, it also wants the beginning of the early history of Persia. Qism II containing the history of the first four Khalifa, etc., in four chapters, is also wanting, or almost entirely wanting in my copy. Qism III in seven chapters, dealing with Chingiz K. and his ancestors and descendants, is imperfect in my copy, but it has the important extract about Shāhrukh's embassy to China Several of the various *bābs* of the Rauẓat are very short in the original work. For instance, the account of Timur begins at his 25th year, and occupies a very few pages. That on the Ottoman kings is also very short. The qism also contains a long account of ʻAbdullah K Uzbeg and his son ʻAbdul-Momīn. Qism IV contains Hindu Traditions and extracts from the Mahābhārat. It seems to be complete in my copy, but many pages are injured, and some are, I think, hopelessly disarranged. Qism V has four bābs, largely taken from Niẓāmu-d-dīn. They deal with the Muhammadan kings of Hindustan, that of Akbar's reign being especially full. But *bāb* 3, the selected verses of poets and Āmīrs, is wanting in my copy. The chapters on provincial kings do not seem to contain anything that is novel

My copy, as also the B.M. Copy Or. 168, ends the 4th Qism with the story of the marriages of Kāmdeo and two brothers with three daughters of Rajah Vajranāb. The Rajah was a devotee of Brahma, and, through his favour, was made secure in his city of Vajrapūra, no stranger being allowed to enter it. He abused his position, and tyrannised over his subjects, and they complained to Krishna. His son Kāmdeo learnt that the Rajah's daughters disapproved of their father's conduct, and wanted to become emancipated by marriage. A gardener's wife used to bring them daily necklaces of flowers, and Kāmdeo and his two brothers, being magicians, disguised themselves as blackbees, and were taken into the palace along with the flowers. The daughters put on the necklaces, and as soon as the gardener's wife had retired, the three bees reassumed their manly form, and married the princesses. Then Krishna besieged the city, and Kāmdeo and his brothers came out of the palace and killed the Rajah, etc. The last words of p. 523^b of B.M. Or. 168 are *u sipah khud az ḥisār barāmida dastha ba satīz u awez kushāda*, and the catchword is *Rajah tabahkār*. My copy carries the story a few lines further down than the B.M. copy and tells of the killing of the Rajah, and of the marriage of his fourth daughter. After this, there are words announcing that the author has completed this section (*qism*) of his book.

The first provincial, or local, Indian dynasty noticed in the Rauẓat is that of Sind It is *bāb* 4th of qism 5th, and in this *bāb*, or chapter, Sind is *faṣl* (sub-chapter) I. And here I have to notice something extraordinary in the way of counting the folios. They proceed by tens, though they are consecutive; thus after 743 the next page is numbered 753, the next 763, the next 773, and so on. Sind begins on 833, and the next page is numbered 843 instead of 834, and the next is 853 instead of (835), and so on. The account of the kings of Multan follows that of Sind, at the reverse of what is marked as folio 843, then Kashmīr follows (fasl 3) on folio 863^b. Then, Gujarat (fasl IV), then Mālwa (fasl V), then, kings of the Deccan, then Jaunpūr, beginning with Khwāja Jahān, and finally Bengal. But the last pages are very dilapidated. The chapter on the Islands of Bengal is wanting in my copy. It is very insufficiently represented in Or. 168. As pointed out by Dr. Rieu, it is fully given in Or. 1762, pp. 175-190 Ṭāhir says he got his information from Khwāja Bāqīr Anṣārī who had been long in Bengal as a *bakhshī*, and had written a book on the subject. Ṭāhir describes Ceylon, Cooch Behar, Assam, Tipperah, etc., mentions 'Isā Khān, and has a long account of king Sebastian's unfortunate expedition to Morocco. He also mentions how he himself went to Goa in 987. 1579, on a mission from Akbar He was a year in Goa, waiting for the Spanish Viceroy. He has some disparaging remarks about the Portuguese, accusing them of dirty habits, and of not bathing, though dressing well. But he says they do not rob Muh. ships like the English. Sebastian was killed 4th August, 1578, and Philip II. became king of Portugal in 1580.

The Rauẓat has in Qism V an account of the Lodī kings of India, and it has lives of Bābur and Humāyūn.

(The only thing new in Ṭāhir's account of Bābur is that he tells us the scene of Bābur's exploit in running along the ramparts of a fort, carrying a man under each armpit. Ṭāhir says that this was in the Kabul Fort. Niẓāmu-d-dīn also tells this story, but he does not specify Kabul, nor does Ferishta. Niẓamu-d-dīn, p. 193 of the Newal Kishore lithograph, adds another feat, viz. that Bābur used to jump on the battlements with double-heeled boots on and run along them (*ba moza du pāshna bar kangar-hāī qala' jasta mīdawīdand*). The Rauẓat seems also to say that 'Abdu-r-Rahīm made the translation, not of his own motion, but in consequence of orders from Akbar).

The life of Humāyūn is fuller than that in Niẓāmu-d-dīn's Ṭabaqāt Akbarī, and in one place it contradicts both him and Abul Faẓl. The latter two writers say that Tardī Beg refused to furnish a horse for Mīriam Makānī (he had done so once before) when she wished to go off through the desert to Persia. Ṭāhir on the other hand says that Tardī Beg's groom brought a horse for M. Makānī, and that she came out from her tent in great agitation, and mounted and rode after her husband. Ṭāhir also gives one or two particulars about Humāyūn's death, which are not in the other histories. He says Humāyūn fell down the stair, and was carried into a room, that he recovered consciousness, but died next day towards the evening. The day of his death was II Rabī'-l-awwal (24 January, 1556).

Ṭāhir says that one chief object of his book was to write a history of Akbar; and he is very full, and chronicles events year by year Among other things he tells us that Shāh Manṣūr was innocent, and that the evidence on which Akbar put him to death was forged. But Niẓamu-d-dīn had said this before. Ṭāhir calls Manṣūr an "incomparable Vizier" *wazīr be naẓīr*

At page 370^a of the B.M. copy Or. 168 (my copy is imperfect at the end) there is an account of Shāhrukh's embassy to China. It returned to Herat on 10 Ramzān 825 (end of August 1422). It is not 'Abdu-r-Razzāq's account, but is the narrative of a painter named Khwāja Ghiyāṣṣu-d-dīn, who was a servant of Shāhrukh's son Baisanghar, and an artist. It is copied from Qāẓī Aḥmad Ghaffārī's Nigaristan. (See Badayūnī III. 185 for an account of Ghaffārī). See the Bombay lith. of the Nigāristan, p. 345. (Ghaffārī's account is interesting, and, if it does not occur in 'Abdu-r-Razzāq's book, should be translated.

The accounts of the predecessors of Chingīz Khān, and of Chingīz himself and his descendants, do not seem to have anything new. Nor is there anything new in the histories of the local dynasties of India, except that in the history of Bengal there are one or two new statements about Rajah Kāns. One is that he came from Orissa, and another that his son Jalālu-d-dīn killed him by throwing him from a roof when he was lying there in a state of intoxication.

To myself one of the most interesting things in the Rauẓat is the account of Sultan Ḥusain of Herat, and of his fourteen sons. This comes into the chapters on the descendants of Timur. The interesting thing is that Ṭāhir gives long extracts (in a Persian translation) from Babur's Memoirs. The translation is not 'Abdu-r-Raḥīm's, and it is perhaps the first instance of any considerable use having been made of Bābur's Memoirs by an oriental writer. The translation is not literal, and it may rather be described as a translation accompanied by notes and corrections, for Ṭāhir's account of Sultan Ḥusain's sons and officers often differs from Bābur's. The following are the points of difference that I noticed:—

Variations between Bābur's Memoirs and Ṭāhir's account of Sultan Ḥusain and his sons and officers.

Ṭāhir says Sultan Ḥusain died on the 16th Zul ḥajja 911 at Bābā Ilāhī, a dependency of Badghīs, and was buried at Herat in a tomb which he himself had ordered. He had reigned for 38 years and 4 months, and was 70 years of age. Among his brave deeds was this, that in the time when he lived as a brigand (during his qazzāqī) he had with 200 horse defeated nearly 40,000 Uzbegs, after crossing the Gurgan river without the aid of a boat. On another occasion, when Sultan Abū S'aīd has sent against him Mīrzā Muḥ. Bakhshī with 3,000 horse, Sultan Ḥusain defeated his opponents though he had only 600 men. Ṭāhir also tells us that when Sultan Ḥusain had become old and feeble, he suffered from hemiplegia (*maflūj*) and could not ride and was carried about in a litter (*Takht rawān*). He was a pigeon-fancier and carried cages of pigeon about with him on his expeditions. He also amused himself with rope-dancers. Ṭāhir gives the names of Sultan Husain's fourteen sons, as Bābur has done, but he gives some additional particulars, thus, he says that Sohrāb the son of Abū Turāb (the 6th son) lost his eye in the battle which Sultan Ḥusain (it should be Bābur) fought with Ḥamza and Mahdī Sultans. Of the 7th son Muhammad Ḥusain, the Rauẓat says that he quarrelled with his father and went to 'Irāq. There he was shut up in the same place with Ism'aīl Ṣafavī and became a Shia This is also Bābur's statement. It must refer to Ism'aīl's early youth, when his father was killed, and his brothers were imprisoned by Y'âqūb Beg of the White Sheep. See D' Herbelot s v Isma'īl Shah.

The 8th son was Farīdūn Ḥusain. Both Bābur and Ṭāhir give an account of him With regard to Bābur's account of his prowess as an archer (Erskine 180), it seems to me that Farīdūn's bow, *kamān guroh*, was, as its name implies, a bullet-bow, i.e. a catapult or balista, and that what Bābur means is that it was so powerful that it carried a ball forty bātman in weight

Bābur says of the 14th son, Muḥ. Qāsim Mīrzā, that he will make mention of him later. But he does not do so, so the probability is that he has made a mistake, and that the 14th son died in infancy as stated by Ṭāhir. Ṭāhir's estimates of Bābur's officers sometimes differ from Bābur's and he occasionally adds some facts about them. Thus with regard to Abū S'aīd Darmīyān (Erskine 187) he says that he owed his name of Darmīyān to his having intervened when Sultan Ḥusain was unhorsed. He brought him another horse, and so enabled him to get away. Tāhir says nothing about Bihbūd or the curious honour that S. Ḥusain bestowed on him. He has a good deal to say about 'Alī Shīr, and he says that Kamālu-d-dīn was really a Saiyid. He has no evil to say of Ẓu-l-nūn Arghūn. Of the mādarzāda Mullā Osman (Erskine 192) he says that Sultan Ḥusain detained him when he was returning from Mecca, not when he was on his way there.[1]

---

[1] *Note of other discrepancies.*

In the account of Herat Bābur says Badya Zaman's Mosque was on the Anjil or Mjal river. Ṭāhir says it was on the bank of a tank. Ṭāhir also says, what we should like to believe, that it was Bābur who fell violently in love with Maṣūma, and that she was beautiful. He mentions the table decoration of the Musk-Willow, or the Mullā Willow.

The author occasionally refers to himself and his family. Thus, in his notice of the poets of Akbar's Court (wanting in my copy) he mentions as one of them his elder brother Khwāja Sultan Muḥammad and quotes one or two of his verses. See B.M. copy Or. 168 p. 579^b. Under the 28th year of Akbar's reign, p. 547 of do. year 992, A.H. (1584), he says that he himself was sent from Pattan in Gujarat with an important message to the Khān-Khānān. He travelled with great expedition, going by Jalaur, and arriving at Mirtha in seven days. He returned with the Khān-Khānān from Ajmīr, and the latter shortly afterwards (January 1584) gained his great victory over Moẓaffar Gujarātī near Aḥmadabad. It is to this deputation of Ṭāhir that Abul Fazl refers in the Akbarnāma, as has already been mentioned. Ṭāhir on the same occasion incidentally mentions that his son (?) Khwaja 'Imādu-d-dīn Ḥasan was appointed to be superintendent of the mart of Cambay.

According to the B.M. copy Or 168 and the extracts in Or. 1762 it was Ṭāhir's father who got this appointment, but my copy was *walad* and not *wālid*. At p. 547^a of B.M. copy Ṭāhir speaks of accompanying Abū Turāb to Mecca, when the latter went to distribute gifts to the Sharīfs there. In the 50th year of Akbar's reign he went from Agra to Burhānpūr to inquire into the circumstances of the death of Prince Daniel. Rieu says this was in 1013, but as Daniel died at Burhānpūr in the middle of the last month of 1013, Ṭāhir can hardly have got his appointment, and have left Agra till 1014. Finally we learn from a statement in page 788 of Rieu's catalogue that Ṭāhir went to Lahore in attendance on Sultan Kharram (Shāh Jahān) in 1015 to wait upon Jahāngīr. Ṭāhir seems a common name for there are several persons of that name mentioned in the Akbarnāma and in Jahāngīr Memoirs. There is a Ṭāhir mentioned in Humāyūn's time, who was a Ṣadr or high judicial officer, and was sent on an embassy to Shāh Ḥasan Arghun, Akbarnāma I. 363, and there was a Ṭāhir Muḥammad Mir Farāghat who was sent along with Rustum Khān in the 8th year of Akbar to procure the release of Khwāja Muaẓẓam's wife. Ṭāhir calls himself in one passage the humblest of Akbar's servants, and a Khānazād (houseborn slave).

NOTE.

Rieu's reference to 787^b is to his catalogue. There we have an account of Add. MSS. 8893, Article II, which is a facsimile of a Persian inscription, at Delhi, of Ṭāhir's, stating that he and his two sons visited Delhi and the saint's tombs there on 1st Rabi al awwal 101 ; the last figure is wanting, and Dr. Rieu fills it up by 5, and probably this is right for Ṭāhir says in the inscription that he was there in attendance on Sultan Kharram (Shāh Jahān), and we know, as stated by Rieu, that Sultan

Kharram waited on his father at Lahore on 13 Rabi-al-akhir 1015. But perhaps the visit refers to 1014 and an earlier visit of Shah Ṭāhir, for we know that Ṭāhir was in Delhi in 1014. See the Asar-al-Ṣanādīd of Saiyid Aḥmad, from an account of the tomb of Amīr Khusrau, p. 41, No. 33 of this ed. of 1895 (the No. 38 of Dr. Rieu, whose edition was the Delhi one of 1854).

On the same page there is an inscription by Mahdī Khwāja; presumably the young man whom Nizāmud-dīn calls Bābur's son-in-law. But it may be the Mahdī Khwāja who was Babur's brother-in-law, and the husband of Khānzāda Begam.

Apparently it must have been on a second visit of Abū-turāb to Mecca that Ṭāhir accompanied him, for the first visit was in 985. He came back, in 987, with the Holy Stone. It was in the 24th year, 987 (1579), that Ṭāhir seems to have gone to Mecca. Perhaps he only went as far as Surat. The Ṭāhir of Akbarnāma III, 218 seems to be the author. The Mīr Farīghat of the 9th year cannot be the author, for Niẓāmu-d-dīn, from whose book Ṭāhir borrows, speaks of this Mīr Farāghat as having died.

7. The Tattva-cintāmaṇi—a most advanced work on Hindu Logic.

Summarised in English by MAHĀMAHOPĀDHYĀYA SATIS CHANDRA VIDYABHUSANA, M.A., PH.D., M.R.A.S., F.A.S.B.

INTRODUCTION.

Importance of the Work.

The Tattva-cintāmaṇi ("a thought-jewel of truth") otherwise known as Pramāṇa-cintāmaṇi ("a thought-jewel of valid knowledge"), of which a short summary in English is given in the following pages, was written by a Brāhmaṇa logician of Mithilā named Gaṅgeśa Upādhyāya. It introduces a new era in the development of Logic in India and is justly reckoned as the first work on the Modern School of Hindu Logic. In modern India Sanskrit scholarship is not considered of any worth unless it is attended with a knowledge of the Tattva-cintāmaṇi or at least a portion of it. The study of this work develops to an enormous extent the discursive faculty in the reader and enables him to argue with hair-splitting distinctions and subtleties.

The book, since its first composition in the 14th century A.D., has been a subject of close study by the Paṇḍits of Mithilā, and about the middle of the 15th century its study was introduced into Bengal by Vāsudeva Sārvabhauma who had been educated in the academies of Mithilā. Since 1503 A.D., when the university of Navadvīpa was established, the Tattva-cintāmaṇi has been a most favourite subject of study in Bengal through the endeavours of the famous Raghunātha Śiromaṇi and others. Gradually the book was introduced into Madras, Mahārāṣṭra and Kāśmīra, and in a couple of centuries it became known all over India. The influence of this epoch-making book can be traced in the works on almost all the branches of Sanskrit learning that have appeared during the last five hundred years. Unfortunately no attempt has yet been made to present the contents of the work in English, Bengali, Hindi or any other modern language, perhaps on account of the bewildering abstruseness of its style and thought.

Commentaries on the Work.

The popularity of the Tattva-cintāmaṇi is attested in unmistakable terms by the numerous commentaries, sub-commen taries and glosses that have grown around the book since its first appearance in the 14th century A.D. The text of the work covers about 300 pages, but its expository treatises extend over 40,000 pages. The following list enumerates some of the expository treatises :—

Text.

1. Tattva-cintāmaṇi by Gaṅgeśa.

Commentaries.

2. Tattva-cintāmaṇi-prakāśa by Rucidatta.
3. Tattva-cintāmaṇi-āloka by Pakṣadhara Miśra.
4. Tattva-cintāmaṇi-dīdhiti by Raghunātha Śiromaṇi.
5. Tattva-cintāmaṇi-rahasya by Mathurānātha.
6. Tattva-cintāmaṇi-dīpanī by Kṛṣṇa-Kānta.
7. Tattva-cintāmaṇi-ṭīkā by Kaṇāda Tarkavāgīśa.

Sub-commentaries.

8. Āloka-sāra-mañjarī by Bhavānanda.
9. Āloka-darpaṇa by Maheśvara Ṭhakkura.
10. Āloka-kaṇṭakoddhāra by Madhusūdana Ṭhakkura.
11. Āloka-rahasya by Mathurānātha.
12. Dīdhiti-vyākhyā-vivecana by Rudra Nyāyavācaspati.
13. Dīdhiti-ṭippanī by Jagadīśa.
14. Dīdhiti-ṭīkā by Gadādhara.
15. Dīdhiti-sāramañjarī by Bhavānanda.

Glosses.

16. Bhavānandī-vyākhyā by Mahādeva Paṇḍita.
17. Kālīśaṅkarī-patrikā by Kālīśaṅkara.
18. Cāndrī-patrikā by Candra Nārāyaṇa.
19. Raudrī-patrikā by Rudra Nārāyaṇa.[1]

etc., etc., etc.

---

[1] The Sanskrit text of Tattva-cintāmaṇi (no. 1) with the commentary of Mathurānātha called Tattva-cintāmani-rahasya (no. 5) has been published by the Asiatic Society of Bengal under the editorship of M.M. Kāmākhyā Nātha Tarkavāgiśa. The Dīdhiti-ṭippanī by Jagadīśa called Jāgadīśī (no. 13) has been published in the Chowkhamba Sanskrit Series under the editorship of Paṇḍita Soma Nātha Upādhyāya. The Tattva-cintāmani-dīdhiti by Raghunātha Śiromani (no. 4) is also available in print. The Tattva-cintāmaṇi-dīpanī by Kṛṣṇa-Kānta (no. 6), Dīdhiti-sāramañjarī by Bhavānanda (no. 15), and Dīdhiti-ṭīkā by Gadādhara (no. 14), were entrusted to Paṇḍita Prasanna Kumāra Tarkanidhi, M.M. Guru Charan Tarkadarśanatīrtha and M.M. Jadunātha Sārvabhauma respectively, for publication in the Bibliotheca Indica Series of Calcutta. A portion of the last work has also been printed in the Śāstra-muktāvalī Series of Madras.

Author of the Work.

The Tattva-cintāmaṇi is the immortal work of Gaṅgeśa, also called Gaṅgeśvara, surnamed Upādhyāya, who was a Maithila Brāhmaṇa. He was born in a village named Karion on the banks of the river Kamalā twelve miles south-east of Darbhanga. It is said that Gaṅgeśa while young was altogether illiterate. He propitiated the goddess Kālī, on the cremation ground adjacent to his uncle's house, and acquired from her, as a boon, deep erudition in the science of Logic.

Gaṅgeśa mentions the name of Sivāditya Miśra,[1] the well-known author of Saptapadārthī, and makes frequent quotations from Ratna-kośa,[2] which is a work on the Vaiśeṣika philosophy. Nothing is definitely known about the Gauḍa Mimāṁsaka[3] or Śrīkara[4] mentioned by him. Gaṅgeśa must have flourished after 1093-1150 A D., the period when Ānanda Sūri and Amaracandra Sūri,[5] whose opinions he has quoted, flourished. As he criticises the Khaṇḍana-khaṇḍa-khādya he must have been posterior also to Śrī Harṣa who lived in Kanauj in the Court of King Jayacandra in 1186 A.D.[6] The latest date that can be assigned to Gaṅgeśa is 1556 A.D., when, according to the Dhanukhā inscription,[7] Maheśa Ṭhakkura, brother of

---

[1] *Vide* Tattva-cintāmaṇi, Pratyakṣa Khaṇḍa, p. 830.

[2] The Ratnakośa, a work on Vaiśeṣika philosophy, has been quoted not only by Gaṅgeśa in the Tattva-cintāmani (Śabda khaṇḍa, ākhāytavāda, p. 830, and anumāna khaṇḍa, p. 885) but also by Vardhamāna in the Nyāya-kusumāñjali and by Raghunātha Śiromaṇi in the Anumānadīdhiti. Glosses on Ratnakośa are said to have been written both by Hari Rāma and Gadādhara. This Ratnakośa is different from the Advaita-ratna-kośa—a work on the Vedānta philosphy by Akhaṇḍānanda—as well as from the Prameya-ratna-kośa, a work on Jaina philosphy by Candraprabha Sūri (1102 A.D.).

[3] *Vide* Tattva-cintāmani, śabda khaṇḍa, śabda prāmāṇya vāda, p. 88.

[4] *Vide* Tattva-cintāmaṇi, śabda khaṇḍa, Jāti śakti vāda, p. 569

[5] *Vide* S. C. Vidyabhusana's Indian Logic: Mediæval School, pp 47-48. Ānanda and Amaracandra, nicknamed as Vyāghra śiśuka and Siṁhaśiśuka, have been referred to by Gaṅgeśa in the Tattva-cintāmaṇi under siṁha-vyāghrokta-lakṣaṇa of Vyāpti.

[6] Khaṇḍana-khaṇḍa-khādya is quoted in the Tattva-cintāmani, Anumāna-khaṇḍa, p. 233, Bibliotheca Indica series. For Śrī Harṣa and Jayacandra, see the Indian Antiquary, 1911-12, Prācīna-lekhamālā, nos. 22-23; and B.B. R.A.S. of 1875, p. 279. Jayachandra was killed by Sahabuddin Ghori in 1194 A.D.

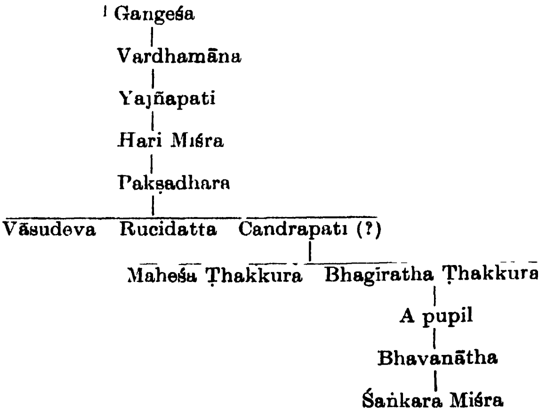
[7] The inscription is found on a stone-slab attached to a well at the village Dhanukhā near Janakapura in Darbhanga. It runs thus:—

आसीत् पण्डितमण्डलाग्रगणितो भूमण्डलाखण्डलो,
जातः खण्डवलाकुले गिरिसुताभक्तो महेशः कृती ।
शाके रन्ध्रतुरङ्गम श्रुतिमते संलक्षिते वापने,
वाग्देवी कृपयाप्तु येन मिथिलाधीशः समस्तो जितः ॥

The śaka 1478 referred to here corresponds to 1556 A.D. That Maheśa Thakkura was a brother of Bhagīratha Ṭhakkura appears from the opening lines of the Dravyaprakāśikā by the latter.

Bhagīratha Ṭhakkura, the well-known author of a sub-commentary on the Tattva-cintāmaṇi, lived. Considering that in the succession of the generations of pupils Bhagīratha Ṭhakkura was seventh in descent[1] from Gaṅgeśa Upādhyāya, and allowing an average life of thirty years for each generation, we may assume that Gaṅgeśa lived 180 years before Bhagīratha, that is, about the year 1376 A.D.

Those[2] who maintain that Gaṅgeśa lived in the fourth quarter of the 12th century A.D., base their conclusion on the alleged mention of Vardhamāna,[3] son of Gaṅgeśa, in the Sarvadarśana-saṁgraha in the 14th century A.D., and upon a curious interpretation of the expression "Śakābdā la saṁ 1509"[4] occurring in a manuscript of Pakṣadhara Miśra's commentary on Gaṅgeśa's Tattva-cintāmaṇi. Now the verse on the authority of which Vardhamāna is alleged to have been mentioned in the Sarvadarśana-saṁgraha is obviously an interpolation, and the expression "Śakābdā la saṁ 1509," written in very modern characters, refers in my opinion not to Lakṣmaṇa saṁvat 159 corresponding to 1278 A.D., but to śaka year 1509 corresponding to 1587 A.D., the word "la saṁ" being either redundant or signifying simply a year. In fact if Gaṅgeśa had been older than the author of the Sarvadarśana-saṁgraha, his work would have been reviewed, or at any rate referred to, in it.

[1] 

[2] *Vide* M. M. Chakravarti's History of Navy-nyāya, J.A.S.B. for 1915, p. 265; Rājendra Nath Ghose's Vyāpti pañcaka, Introduction, p. 33.

[3] *Vide* Sarvadarśana saṁgraha, chapter on Pāṇinīya darśana.

[4] प्रत्यक्षालोक (Pratyakṣāloka), which is a commentary on Gaṅgeśa's Tattva-cintāmaṇi by Pakṣadhara Miśra, was, according to its colophon, copied in the Śaka year 1509 (corresponding to 1587 A.D.) and not in the Lakṣmaṇa saṁvat 159 (corresponding to 1278 A.D.), as the date contained in the colophon runs thus:—शुभमस्तु श्रीरस्तु शकाब्दा ॥ लसं १५०९ मैं श्रावणस्य ६ ॥

THE TEXT.

Book I.

प्रत्यक्षखण्डम्—Perception.

The Tattva-cintāmaṇi is divided into four books dealing respectively with (1) Perception (Pratyakṣa), (2) Inference (Anumāna), (3) Comparison (Upamāna), and (4) Verbal testimony (Śabda), which are the four means of deriving valid knowledge. The first book, which treats of perception, opens with a stanza saluting God Śiva.

मङ्गलवादः ।

Invocation of Blessings.

Salutation is offered to Śiva to invoke his blessings. The invocation is of three kinds, *viz.* bodily, vocal, and mental. The bodily invocation consists in salutating a deity, the vocal in reciting the eulogy of the deity, and the mental in meditating on him. "All polite people," says Gaṅgeśa, "must observe the decorum of invoking blessings if they wish to bring their work to a successful completion." Though we do not find any explicit text in the Veda enjoining invocation of blessings, yet from the laudable practice of good people we can easily infer the implicit existence of such a text. It should be stated that the invocation of blessings is not the immediate cause of the completion of a work but is the means of removing obstacles which beset the work. In the case of an atheist finishing his work successfully without any invocation of blessings, we are to suppose that there were no obstacles in his way, or that he performed the invocation in his previous life. The case of a theist invoking blessings and yet failing to finish his work, is explained on the supposition that he encountered enormous obstacles which his feeble invocation could not remove. The Kādambarī, which opens with a profuse invocation of blessings, furnishes an illustration of a work remaining unfinished, owing to the enormity of obstacles in its way.

प्रामाण्यवादः ।

The Validity of Knowledge.

Pramā or valid knowledge.

In determining the true meaning of "pramāṇa" (the means of valid knowledge) one must understand the true meaning of the word "pramā" (valid knowledge). Pramā or valid knowledge is the knowledge of a thing as it is—it is the knowlege of the generic nature as abiding in its own subject (that is, abiding in every one of its individual embodiments). For instance, to know a piece of silver to be as such, is valid knowlege inasmuch as silverness, which is a generic nature, really abides in the individual silver which is its subject.

How is valid knowledge derived and known ?

Two questions arise here: (1) whence is the validity of knowledge derived, and (2) how are we conscious of the validity ? To the first question the Mīmāṁsakas reply by saying that knowledge derives its validity from its own general grounds (or causes). As to the second question they say that knowledge is self-evident, that is the very grounds, out of which arises consciousness of knowledge, produce also the consciousness of its validity, and this consciousness of validity prompts us to activity.

Gaṅgeśa opposes the first reply by saying that it the validity of knowledge were derived from the general grounds of knowledge itself, then invalid knowledge would have been identical with valid knowledge. The second reply is also opposed on the ground that if we were conscious of the validity of knowledge along with our consciousness of knowledge itself, there could not have arisen in us doubt with regard to the validity of any kind of knowledge specially in the unhabitual condition. But there often arises in us knowledge of a dubious character, and the Mīmāṁsakas cannot satisfactorily explain the production of this dubious knowledge or doubt. If there is consciousness of knowledge there is, according to them, along with it a consciousness of its validity which leaves no room for doubt; and if, on the other hand, there is no consciousness of knowledge, there cannot arise any consciousness of its dubiousness. Hence Gaṅgeśa concludes that the validity of knowlodge is not derived from its general grounds (or causes). It is according to him derived through its special cause called instrument. The general grounds of knowlege are the union of the tactual surface with the mind and that of the latter with the soul, while the special causes are different. The special cause of perception is the intercourse of a sense-organ with its object without any hindrance, that of inference is consideration (or the knowledge of premisses), that of comparison is the knowledge of similarity, and that of verbal testimony is the knowledge of consistency. Our knowledge of colour, for instance, is valid if there is the contact of our eye with the colour without any hindrance. Gaṅgeśa further observes that our consciousness of the validity of a particular knowledge does not arise from our consciousness of the particular knowledge itself, but from a different source, *viz.* inference from the fruitful correspondence between our knowledge (idea) and the activity prompted by it. "This knowledge (idea)," says he, "is valid because it is conducive to activity which is fruitful; whatever is not conducive to activity which is fruitful, is not valid knowledge." Suppose, for instance, a person cognises from distance a white thing to be a piece of silver. His knowledge will be valid if it harmonises with his actual experience when he approaches the piece of silver. Our consciousness of the validity of a particular knowledge arises therefore from our consciousness of the fruitful correspondence or harmony between the particular knowledge (idea) and the activity which it leads to.

अन्यथा ख्यातिः ।

Invalid Knowledge.

Apramā, anyathākhyāti, bhrama, or invalid knowledge.

Gaṅgeśa says that invalid knowledge or error, in Sanskrit *apramā, anyathākhyāti* or *bhrama,* is the knowledge (experience) of a thing as it is not — it is the knowledge (experience) of a generic nature which does not abide in its own subject but which abides in the subject of another generic nature. For instance, to know a pearl to be a piece of silver is invalid knowledge inasmuch as the generic nature "silverness" does not abide here in the piece of silver which is its own subject, but abides in a pearl which is the subject of another generic nature, *viz.* pearlness.

How is activity, *pravṛtti,* caused ?

The Mimāṁsakas (Prabhākaras) do not admit invalid knowledge or error. All knowledge, according to them, is valid, and as such prompts us to activity. In the case of a person who takes a pearl to be a piece of silver by saying "this is silver," we should bear in mind that he acquires the knowledge of "this" (pearl) through perception and that of "silver" through recollection. But he, owing to some defect, is not conscious of the distinction between "this" (pearl) and "silver," that is, between "perception" and "recollection"; and this non-consciousness of distinction leads him to activity

Gaṅgeśa opposes the Mīmāṁsakas by saying that the non-consciousness of distinction cannot account for the activity to which the person is prompted. There are here, according to the Mīmaṁsakas, grounds for activity, counter-activity and non-activity. The knowledge of "silver," for which the person is solicitous, must cause in him an activity while the knowledge of "this" (pearl), for which he is not solicitous, must cause in him a counter-activity, and the non-consciousness of distinction (which is absence of knowledge) causes him neither activity nor counter-activity, but leaves him in non-activity. The non-consciousness of distinction is not therefore the cause which leads him to activity.

According to Gaṅgeśa, when a person takes a pearl to be a piece of silver by saying "this is silver," he acquires the knowledge of both "this" (pearl) and "silver" by means of perception (the first through the ordinary intercourse between the sense-organ and its object, and the second through the transcendent intercourse whose character is knowledge). He through some defect (of his eye, etc.) identifies "this" (pearl) with "silver," that is, becomes conscious of the generic nature "silverness" as abiding in "this" (pearl) which is not its own subject. Here his knowledge is invalid, or, in other words, he commits an error. When a person, on the other hand, takes a piece of silver to be silver by saying "this is silver," he identifies "this" with "silver," or, in other words, becomes conscious of the generic nature "silverness" as abiding in "silver" which is its own subject. His knowledge is valid.

Whether a particular knowledge is valid or invalid it must be of a determinate character if it is to lead us to activity. Determinate knowledge is the knowledge of a generic nature as abiding in a subject. As already stated, when the generic nature abides in its own subject the knowledge is valid; but when it abides in the subject of another generic nature, the knowlege is invalid. A valid determinate knowledge (*pramā*) leads us to activity which is fruitful, while an invalid determinate knowledge (*apramā*) leads us to activity which does not end in fruition. In explaining the cause of activity, whether fruitful or fruitless, we must assume determinate knowledge, and in accounting for fruitless activity we must assume error. Moreover, it is a matter of experience that in our consciousness, valid or invalid, of the form "this is silver" there is only one kind of knowledge, *viz.* determinate knowledge, and it will be cumbrous to assume two kinds, *viz.* perception and recollection.

सन्निकर्षवादः ।

The Intercourse between Senses and their Objects.

Ordinary Perception (laukika pratyakṣa).

Perceptual knowledge (*pratyakṣa*).

Perceptual knowledge, or more simply perception, has been defined [by Akṣapāda] as knowledge which arises from the intercourse of a sense with its object, and which is non-erratic, being either reflective (mediate) or non-reflective (immediate). This definition, according to Gaṅgeśa, is too wide as it includes recollection and inference of the soul, and is also too narrow as it excludes perception by God. To avoid such defects Gaṅgeśa proposes to define perception as a direct apprehension. When, for instance, a visual perception takes place there arises in us a corresponding knowledge of the form "I apprehend direct." Perception is further defined by Gaṅgeśa as knowledge whose instrumental cause is not knowledge. The instrumental causes of inference, comparison and verbal testimony are respectively the knowledge of premisses, the knowledge of similarity and the knowledge of consistency; but the instrumental cause of the perception is a sense organ which is not knowledge.

The word perception, which ordinarily signifies perceptual knowledge or rather the means by which we derive perceptual knowledge, does sometimes stand for the whole process in which a sense in intercourse with its object produces knowledge. The senses are six, *viz.* (1) the eye, (2) the ear, (3) the nose, (4) the tongue, (5) the tactual surface, and (6) the mind. Their objects are respectively the following :—(1) colour, (2) sound, (3) odour, (4) savour, (5) touch of warmth, coldness, hardness, softness, etc., and (6) feeling of pleasure, pain, etc. Correspondent with the senses there are six kinds of knowledge (perception), *viz.* the visual, auditory, olfactory, gustatory, tactual and mental (internal).

The intercourse, or rather the ordinary intercourse, which is the connection of a sense with its object, is of six kinds as mentioned below :—

1. *Union* (*saṁyoga*), *e.g.* in the visual perception of a jar there is a union of our eye with the jar.
2. *United-inherence* (*saṁyukta-samavāya*), that is, inherence in that which is in union *e.g.* in the visual perception of the colour of a jar there is a union of our eye with the jar in which colour inheres.
3. *United-inherent-inherence* (*saṁyukta-samaveta-samavāya*), that is, inherence in that which inheres in what is in union, *e.g.* in the visual perception of the colourness (the generic nature of colour) of a jar there is a union of our eye with the jar in which inheres colour wherein again abides colourness in the relation of inherence.
4. *Inherence* (*samavāya*), *e.g.* in the auditory perception of sound there is the inherence of sound in the ether which pervades the cavity of our ear.
5. *Inherent-inherence* (*samaveta-samavāya*), that is, inherence in that which inheres, *e.g.* in the auditory perception of soundness (the generic nature of sound), there is the inherence of soundness in sound which again inheres in the ether of our ear-cavity.
6. *Particularity* (*viśeṣaṇatā*), *e.g.* in the perception of non-existence of a jar on a ground, there is a union of our eye with the ground which is possessed of non-existence of the jar.

Transcendent Perception (*alaukika pratyakṣa*).

The supersensuous or transcendent perception does not take place through any of the six kinds of ordinary intercourse described above. But it is produced through an intercourse which is transcendent. The transcendent intercourse is of three kinds, *viz.* (1) the intercourse whose character is general (*sāmānya-lakṣaṇa*); (2) the intercourse whose character is knowledge (*jñāna-lakṣaṇa*); and (3) the intercourse which is produced by meditation (*yogaja*)

The intercourse (perception) whose character is general.—In the perception of all individuals possessing a generic nature, the knowledge of the generic nature constitutes the intercourse. This is a transcendent intercourse whose character is general. When, for instance, there is an intercourse of our eye with a case of smoke there arises in us a perception of smoke of all times and all places.

The process in which this perception takes place is as follows:—The intercourse between our eye and the case of smoke is an ordinary one called union (*saṁyoga*) and that between our eye and smokeness (the generic nature of smoke) is also an ordinary one which is called united-inherence (*saṁyukta-samavāya*). But the intercourse between our eye and all cases of smoke is not an ordinary one. It is a transcendent intercourse as there is no ordinary union of our eye with all cases of smoke of all times and all places. The intercourse consists here of the knowledge of smokeness—a generic nature which is possessed by all cases of smoke of all times and all places. This sort of intercourse which consists of the knowledge of a generic nature is called a transcendent intercourse whose character is general. The objection—that if there were a transcendent intercourse (perception) whose character is general, we could become omniscient, inasmuch as in perceiving an object of knowledge we could perceive all objects of knowledge, is untenable because, though we can perceive all objects of knowledge comprehended under a generic nature, we cannot perceive their mutual differences, and as such cannot be omniscient.

Intercourse (perception) whose character is knowledge.—If in the perception of a thing the knowledge of the thing itself constitutes the intercourse, it is called an intercourse whose character is knowledge. On seeing a piece of sandal-wood we often say that it is fragrant. How does this visual perception of fragrance take place? The answer is that when the eye comes in union with the piece of sandal-wood, there arises in us a kind of knowledge (recollection) of fragrance which serves as the intercourse for our perception of the same. [This is an instance of what is called in Western Psychology an indirect perception.]

Some say that the case cited above may be explained by the intercourse whose character is general and there is no necessity for our assuming another intercourse whose character is knowledge. On seeing a piece of sandal-wood there arises in us the recollection of fragrance and fragrancy (the generic nature of fragrance) which abide in sandal-wood in the relations of inherence (*samavāya*) and inherent-inherence (*samaveta-samavāya*) respectively. From the recollection of fragrancy, through the intercourse whose character is general, there arises in us the perception of all individual fragrances including the fragrance of this piece of sandal-wood.

In reply Gaṅgeśa says that though, through the intercourse whose character is general, we can somehow explain the perception of fragrance, we cannot through this intercourse explain the perception of fragrancy. Had there been a fraganciness which is the generic nature of fragrancy, we could have, through the intercourse whose character is general, derived the perception of fragrancy. But there is no generic nature of fragrancy which is itself the generic nature of fragrance. We cannot therefore perceive fragrancy through the intercourse whose character is general. It is through the intercourse whose character is knowledge that we can perceive fragrancy the recollection of which serves as the intercourse for such perception

Intercourse (perception) produced by meditation.—It is of two kinds, *viz.* (1) the intercourse (perception) of an ascetic who has attained union with the Supreme Being, and (2) that of an ascetic who is endeavouring to attain such a union. The first ascetic enjoys a constant perception of all things while the second ascetic can secure perception only when he is attended with meditation.

समवायवादः ।

Inherence.

In the visual perception of the colour of a jar, the intercourse that exists between our eye and the colour has been designated as united-inherence. It is not possible to understand the meaning of this term unless we understand the meaning of inherence. Inherence (*samavāya*) is an intimate relation between two things which cannot exist separately. Of the two things one exists only as lodged in the other. Such things are the whole and its parts, the substance and its qualities or action, the community and individuals, and the eternal substances and their final particulars. The relation that exists between these things is called inherence, *e.g.* threads inhere in the cloth, colour inheres in the jar, and so on. The knowledge of a whole as composed of parts, or of a substance as possessing qualities, etc. is determinate knowledge. In such knowledge we have to consider three things, *viz.* the subject, the predicate, and the relation that exists between them. For instance, in our determinate knowledge of the form "the man has a stick," the man is the subject and the stick is the predicate, while the relation that exists between them is union. Similarly in our determinate knowledge of the form "the flower has colour," the flower is the subject and the colour is the predicate, but the relation that exists between them is not union but inherence. When two things can be separated from each other the relation between them is union, but when they cannot be mutually separated their relation is inherence. In fact colour is not united with flower but inheres in it.

अनुपलब्ध्यप्रामाण्यवादः ।

The Invalidity of Non-perception.

Some say that non-existence is not perceptible by any of our senses and that the knowledge of non-existence of a thing arises through non-perception of the thing itself. For instance, the form in which the knowledge of non-existence of a pot arises is as follows :—'Had there been a pot here, it would have been perceived: since it is not perceived, there is no pot here.' The non-perception of a pot is therefore the means of knowing the non-existence of the pot. Gaṅgeśa does not admit non-perception to be a means of knowledge. Non-existence, according to him, is perceived by our senses through the intercourse of particularity. For instance, in the perception of non-existence of a pot on a ground, there is a union of our eye with the ground in which abides non-existence of the pot as a particularity, that is there is perception of the ground as possessed of the non-existence of the pot. The sense employed in the perception of a thing is the same as that which is employed in the perception of its non-existence. Whatever thing is perceptible by a sense, the non-existence of that thing is also perceptible by the same sense, *e.g.* a colour and its non-existence are both perceived by the eye, a sound and its non-existence by the ear, an odour and its non-existence by the nose, a savour and its non-existence by the tongue, warmth and its non-existence by the tactual surface, and pleasure and its non-existence by the mind.

अभाववादः ।

Non-existence (or negation).

Some say that there is no separate entity called non-existence (*abhāva*), that perception of what is ordinarily called the "non-existence of a thing" depends upon the locus (*adhīkaraṇa*) of non-existence of the thing, and that the intercourse through which we perceive the thing, must be the same as that through which we perceive its non-existence, *viz.* union, etc. For instance, our perception of non-existence of a pot of the form "there is no pot on the ground" does not presuppose a separate entity called non-existence, rests entirely on the ground which is the locus of non-existence of the pot, and is carried on through the intercourse of union.

Gaṅgeśa opposes the above view by saying that we must admit a separate entity called non-existence, that our perception of what is ordinarily called the non-existence of a thing, does not rest entirely on the locus of non-existence of the thing, and that the intercourse through which we perceive non-existence of the thing is not union, etc. but particularity (*viśeṣaṇatā*). In the instance cited above our perception of non-existence of the pot does not rest on the ground, that is, non-existence of the pot is not identical with the ground. Had the one rested on the other, or had the two been identical, there would have been perception of non-existence of the pot even when the pot was on the ground, and further there would have been a disturbance of the relation of container and contained that exists between the two. Since this contingency is disastrous, we must admit that there is something on the ground which operates in our failure to perceive the pot. This something is "non-existence" which is a separate entity lying over and above the ground. Our failure to perceive a thing does not therefore rest on the mere locus of the thing, but on the locus as possessed of this something or non-existence. The relation that exists between the locus and non-existence is that of particularity (*viśeṣaṇatā*). When we perceive non-existence of a pot on a ground our eye comes in union with the ground on which abides non-existence of the pot in the relation of particularity. The intercourse in this case is therefore of united particularity (*saṁyukta-viśeṣaṇatā*). Similarly the relation of particularity is to be associated with inherence, united-inherence, etc

Every non-existence has a counterpart, *e.g.* with reference to the non-existence of a pot and that of a piece of cloth, the pot and the piece of cloth are respectively the counterparts. The perception of a non-existence is subject to that of its counterpart The process, in which we perceive non-existence through the relation of particularity, involves knowledge of its counterpart which is produced through memory or from any other source. In our perception of non-existence of a pot on a ground, there arises in us first of all recollection of a pot, and as soon as our eye comes in union with the ground we perceive non-existence of the pot on the same.

Non-existence is of two kinds: (1) universal, and (2) reciprocal. The universal non-existence is sub-divided into the antecedent, the subsequent, and the absolute. The antecedent non-existence is that which has no beginning but has an end, *e.g.* a jar is an antecedent non-existence before it is made up. The subsequent non-existence has a beginning but no end. *e.g.* a jar is subsequent non-existence after it is destroyed. The absolute non-existence is that whose counterpart is viewed in relation to all the three times—past, present, and future, *e.g.* there is no jar on the ground. The reciprocal non-existence is the non-existence of identity, *e.g.* a jar is not a pot.

प्रत्यक्षकारणवादः ।

Causes of Perception.

The causes of perception are the following:—

Causes of knowledge in general.

1.—A union of the mind with the tactual surface and the soul. While a person is in deep sleep there is produced in him no knowledge as there is then a union of his mind with the soul alone but not with the tactual surface. The mind abides at that time near the heart in an intestine called pericardium which is without a tactual surface. In recollecting a thing our mind is in union with both the tactual surface and the soul.

2.—A union of the mind with the senses and an intercourse of the senses with their objects, *e.g.*, in the perception of a colour there is a union of our mind with the eye which is in intercourse with the colour.

Special causes of perception.

3.—Proportionate extension of the objects of sense, that is, the objects must not be of infinite extension as ether, or of no extension as atoms. The ether and atoms are not perceived but inferred, the former being the locus of sound, and the latter the final particulars of things.

4.—An obviousness or manifest form of an object of sense, *e.g.* a colour, if it is to be perceptible, must possess obviousness. A meteor which is obscured in the midday blaze, cannot be perceived. Similarly, a fire which exists in the latent condition in a heated frying-pan, is not perceptible.

Special causes of visual perception.

5.—A special connection of light with the object of sense, *e.g.* a pot, if it is to be perceptible, must have sufficient light on its front-part rather than on its back-part.

6.—Absence of obstacles, *e.g.* too much proximity or too much distance, is often obstructive of our perception.

मनोऽणुत्ववादः ।

The Atomic Nature of the Mind.

The senses through the instrumentality of which we perceive colour, sound, odour, savour and touch, are the eye, ear, nose, tongue and tactual surface respectively. The sense which operates as an instrument in our perception of pleasure, pain, desire, aversion, intellect and volition, is the mind which is called the internal sense as a contrast to the other five senses which are external.

The mind is atomic in extension inasmuch as we cannot perceive various objects at one and the same time. Although there may exist intercourses of our external senses with their corresponding objects no perception will be produced until the mind comes in union with them. Had the mind been of infinite extension or even of proportionate extension, it could have come in union with all the five external senses at once to give rise to the five kinds of perception simultaneously. But everybody is aware that it is impossible for more than one kind of perception to arise at one and the same time. This shows that the mind can come in union with only one external sense at a time, or in other words, the mind is atomic in extension.

Those who deny the atomic nature of the mind on the ground that sometimes, *e.g.* in eating a large cake soaked in milk and sugar, we find the operations of the mind as united with several senses simultaneously, should be told that the operations, which they suppose to be simultaneous, do really take place in succession as the hundred leaves of a lotus are pierced one after another by a needle.

अनुव्यवसायवादः ।

The Doctrine of Self-consciousness.

Some philosophers maintain that any particular kind of knowledge performs by itself all its practical functions and does not depend upon another knowledge for the same. For instance, all practical functions connected with a pot can, according to them, be performed when there is knowledge of the pot, but we cannot perform those functions when there is no such knowledge. It is therefore knowledge which performs all its practical functions. We must not however suppose that all practical functions are performed by all kinds of knowledge promiscuously. In fact each kind of knowledge is, by its very nature, related to a particular object which enables us to perform its corresponding functions.

Some others, who hold the doctrine of triangular perception (*tripuṭī-pratyakṣa-vādinaḥ*), say that each knowledge is self-manifest and that it manifests itself in the form "I know this," which involves an assumption of a knower (the soul), a knowable (the object), and knowledge (the act), and as such performs all its practical functions.

Gaṅgeśa, in opposing the above views, says that a particular knowledge cannot by itself perform its practical functions, but is dependent upon another knowledge called self-consciousness (*anuvyavasāya*) which enables it to perform the same. 'Our knowledge,' continues Gaṅgeśa, 'arises in the form "this" or "pot," but not in the form "I know this" or "I know the pot";

and until it assumes the latter form no practical functions can be performed.' He therefore lays down that after the origination of knowledge of the form "this" or "pot," there arises another knowledge called self-consciousness of the form "I know this" or "I know the pot," which performs all practical functions. This latter knowledge called self-consciousness arises through the intercourse of the previous knowledge with our mind. The intercourse is united-inherence (saṁyukta-samavāya) inasmuch as there is a union of the mind with the soul in which resided the previous knowledge in the relation of inherence. In fact the latter knowledge or self-consciousness is the mental (or internal) perception of the previous knowledge.

निर्विकल्पकवादः ।

Immediate Perception.

Perception is of two kinds, *viz.* (1) the immediate or non-reflective (*nirvikalpaka*), and (2) the mediate or reflective (*savikalpaka*). The immediate is perception of an indeterminate character. It is perception of a subject and its generic nature as separated from each other, *e.g.* the perception of a mere pot or mere potness without their mutual connection. Even the "mere pot" or "mere potness" is of the form "something" of which it is absurd to talk as a pot or potness. On the intercourse of a sense with its object the first perception that takes place is immediate or non-reflective. It is supersensuous, that is, not cognisable by any of our senses, not even by the mind. It has been defined as knowledge which is devoid of all connection with name, generic nature, etc., which indicates no relation and involves no specification.

सविकल्पकवादः ।

Mediate Perception.

The mediate or reflective is perception of a determinate character. It indicates a subject and its generic nature through their relation to each other, *e.g.* "this is a pot" where "potness" (the generic nature) abides in "this" (the subject) in the relation of inherence. The perception of the form "this is a pot" is therefore mediate or reflective.

The doctrine of mediate or reflective perception may be set forth as follows :—

Immediate perception—the perception of "pot" and "potness" as separated from each other.

Mediate perception—the perception of "potness" as abiding in "this" in the form "this is a pot."

Self-consciousness—the mental perception of the knowledge of "potness" as abiding in "this" in the form "I know this is a pot."

Book II.

अनुमानखण्डम्—Inference.

अनुमितिनिरूपणम् ।

The Determination of Inferential Knowledge.

The inferential knowledge (anumiti) is that knowledge which is derived through another knowledge, *viz.* that the middle term in invariable concomitance with the major term abides in the minor term, *e.g.*

The hill is full of fire,
because it is full of smoke.

Here the "hill" is the minor term which is also called the subject, locus or side; the "fire" is the major term, also called the predicate or probandum; and the "smoke" is the middle term, also called the reason or mark. The knowledge of the form "the hill is full of smoke" is an inferential knowledge inasmuch as it is derived through another knowledge, *viz.* that of the smoke which, as being in invariable concomitance with fire, abides on the hill. This other knowledge, *viz.* that smoke in invariable concomitance with fire abides on the hill, is an instance of what is called *consideration, knowledge of premisses* or *inference* (parāmarśa or anumāna) It is the intercourse or operation through which we arrive at the inferential knowledge. The whole process of arriving at that knowledge is also sometimes called inference.

Some say that perception is the only means of knowledge and that there is no separate means of knowledge called inference. Their reasons are as follows:—

1. There cannot be any knowledge of the invariable concomitance between the middle term and the major term;
2. The middle term may be erratic owing to its connection with a condition accepted or disputed; and
3. We often associate the middle term with the major term through a mere probability which involves no certainty.

Gaṅgeśa sets aside the above view by saying that there are other means of knowledge over and above perception, and that inference is at any rate a means of knowledge. The doctrine of invariable concomitance, etc. will be treated later. In support of inference as a means of knowledge it will suffice at present to observe as follows:—

1. One cannot establish the invalidity of an inference unless one *infers* the invalidity from the similarity of the inference with things previously known as invalid. This process presupposes inference as a means of knowledge.

2. The statement that "inference is not a means of knowledge" is of no use to an expert who is aware of the invalidity of inference. It may be advanced usefully before a suspicious or an erring person. Now, how are we to know that the person is in suspicion or error? It is certainly not through perception but through inference.

3. "Inference is not a means of knowledge." Is this statement valid or invalid? If it is valid we must admit verbal testimony to be a means of knowledge. If on the other hand it is invalid, inference is to be admitted as a means of knowledge. Both the alternatives are incompatible with the opponent's view.

4. Moreover if inference is not valid, perception too cannot be valid. The validity being an object of inference how can we, in the absence of inference, ascertain the validity of perception? If again perception were by itself valid, then there could not arise any doubt about its validity.

Inference is therefore a means of knowledge, and perception is not the only means.

The inferential knowledge having been based upon an invariable concomitance of the middle term with the major term it is necessary to define the phrase "invariable concomitance." In Sanskrit it is called "Vyāpti" which is rendered by such expressions as pervasion, inseparable connection, perpetual attendance, constant co-presence, etc.

व्याप्तिपञ्चकम् ।

Five Provisional Definitions of Invariable Concomitance.

1. Invariable concomitance is the non-presence of the middle term in the locus of the non-existence of the major term, *e.g.*

The hill is full of fire,
because it is full of smoke.

Diagram I.

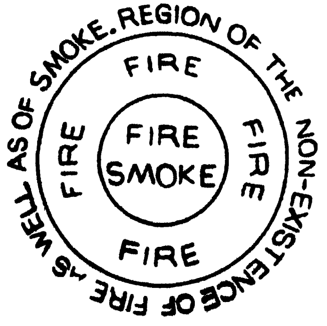
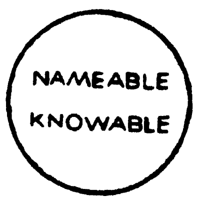


Diagram II.



Here smoke (the middle term) is absent from all regions outside the region of fire (the major term) as shown in diagram I.

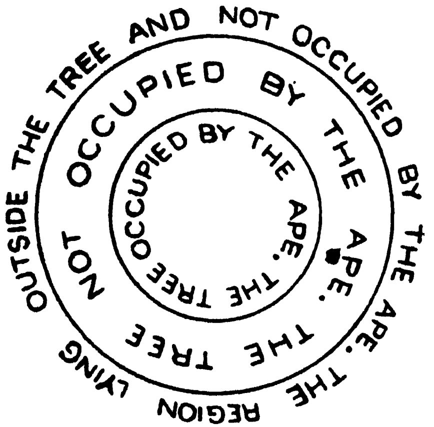
Gaṅgeśa observes that the definition is defective inasmuch as it does not apply to an exclusively affirmative inference, such as "all are nameable, because they are knowable" illustrated in diagram II, in which outside the region of the nameable there is nothing from which the knowable may be absent.

2. Invariable concomitance is the non-presence of the middle term in that locus of the non-existence of the major term which is not the locus of the major term itself, *e.g.*

This is occupied by the ape,
because it is the tree.

Here "the tree" is the middle term, and "occupied by the ape" is the major term. In diagram III the tree is totally absent from the region not occupied by the ape. The part of the tree not occupied by the ape is excluded from the locus of the non-existence of the major term by the clause "which is not the locus of the major term itself." This definition too is defective as it, like the previous one, does not apply to an exclusively affirmative inference.

Diagram III.


THE REGION LYING OUTSIDE THE TREE AND NOT OCCUPIED BY THE APE.
THE TREE NOT OCCUPIED BY THE APE.
THE TREE OCCUPIED BY THE APE.

3. Invariable concomitance is the non-co-presence of the middle term with that reciprocal non-existence whose counterpart abides in the locus of the major term, *e.g.*

The hill is full of fire,
because it is full of smoke.

In diagram I we find that smoke is not co-present with anything which is non-existent in reciprocity to fire. Water, book, cloth, table, etc., are all non-existent in their reciprocal relation to fire, that is, they are not fire.

Gaṅgeśa observes that this definition too is defective as it does not cover the case of an exclusively affirmative inference. In diagram II we find that there is no reciprocal non-existence whose counterpart is the region of the nameable.

4. Invariable concomitance is the state in which the middle term forms the counterpart of that non-existence which abides in the locus of the non-existence of the entire major term, *e.g.*

The hill is full of fire,
because it is full of smoke.

Here smoke forms the counterpart of the non-existence of smoke which abides in the region of the non-existence of entire fire.

According to Gaṅgeśa the definition is defective as it fails to explain the case of an exclusively affirmative inference. In diagram II we find that there is no non-existence of the knowable which abides in the region of the non-existence of the nameable.

5. Invariable concomitance is the non-presence of the middle term in what is not the locus of the major term, *e.g.*

The hill is full of fire,
because it is full of smoke.

Here smoke is not present in anything which is not the abode of fire. This definition too, according to Gaṅgeśa, is defective as it does not meet the case of an exclusively affirmative inference. In diagram II we find that there is no non-presence of the knowable in what is not included in the region of the nameable.

सिंहव्याघ्रोक्त व्याप्तिलक्षणम् ।

Definition of Invariable Concomitance given by Lion and Tiger.

1. Invariable concomitance is the state in which the middle term has not a locus in which there is the non-co-presence of the major term, *e.g.*

The hill is full of fire.
because it is full of smoke.

Here Fire is always co-present with smoke in the locus of the latter. It never occurs that in the locus of smoke there is no fire.

2. Invariable concomitance is the state in which the middle term has not a locus which is different from the locus of the major term, *e.g.*

The hill is full of fire,
because it is full of smoke.

The locus of smoke is never different from that of fire, that is, the former never extends beyond the latter.

Gaṅgeśa observes that both these definitions are defective, inasmuch as their import is to show that the middle term has not a locus which is also not the locus of the major term. Contrarily to this we find that the middle term has often a locus which is not the locus of the major term. For instance, smoke on a hill has a locus which is not the locus of fire in a kitchen.

व्यधिकरणधर्म्मावच्छिन्नाभावः ।

Non-existence whose Counterpart is Qualified by a Nature abiding in a Different Locus.

Most of the definitions of invariable concomitance given above were defective inasmuch as they did not cover the case of an exclusively affirmative inference. They involved such phrases as "non-existence of the major term" and "difference of locus of the major term" which could not apply to an exclusively affirmative inference in which the major term was all-pervading. Tó make the "non-existence of the major term" and "difference of locus of the major term" possible, even in an exclusively affirmative inference, some logicians assume a non-existence whose counterpart is qualified by a nature abiding in a locus different from the counterpart. The expression "there is no fire possessing the nature of a pot" signifies that "there is non-existence of a fire as qualified by the nature of a pot" which, according to them, is quite correct inasmuch as the nature of a pot abides in the relation of inherence in a pot and not in fire. Similarly "there is no nameableness possessing the nature of a pot" signifies that "there is non-existence of nameableness as qualified by the nature of a pot." Though nameableness (major term) is all-pervading we have, they say, been able to talk of its non-existence by assuming the nature of a pot to abide in it (instead of in the pot).

Gaṅgeśa opposes the above view by saying :—(1) That on the assumption of a non-existence of this form invariable concomitance is to be defined as the state in which the middle term has not the co-presence with a non-existence whose counterpart is qualified by a nature which is the nature of the major term. This definition, in which the counterpart and the major term are identical, does not involve a non-existence of the form proposed. The definitions already condemned cannot also be defended by the assumption of this non-existence. (2) This sort of non-existence is not well known and cannot be established by any evidence. (3) The counterpart of the non-existence is said to be qualified by a nature which does not abide in it. This is impossible because our knowledge of non-existence depends on that of its counterpart as possessed of the nature. (4) And to assert a non-existence of this form is as absurd as to say that there is no hare-horn in a cow.

पूर्व्वपक्षः ।

The prima facie Definitions of Invariable Concomitance.

Gaṅgeśa examines and condemns twelve other definitions of invariable concomitance called prima facie definitions given by previous logicians.

सिद्धान्त लक्षणम् ।

The Conclusive Definition of Invariable Concomitance.

Invariable concomitance is the co-presence of the middle term with the major term which is not qualified by the nature of the counterpart of that absolute non-existence which abides in the same locus with the middle term, but abides in a different locus in respect of the counterpart, *e.g.*

The hill is full of fire,
because it is full of smoke.

Diagram IV.

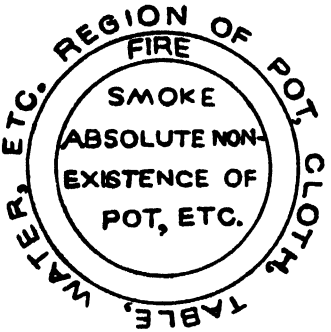
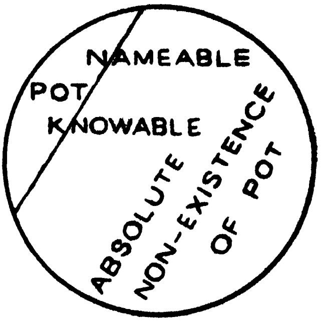

REGION OF POT, CLOTH, TABLE, WATER, ETC.
FIRE
SMOKE
ABSOLUTE NON-EXISTENCE OF POT, ETC.

Diagram V.



Here there is co-presence of smoke (the middle term) with fire (the major term) which is not qualified by the nature of a pot, and the absolute non-existence, whose counterpart is the pot, abides in the same locus with smoke, but abides in a different locus in respect of the pot

This definition covers the case of an exclusively affirmative inference inasmuch as it does not involve a non-existence of the major term, and the major term is not the counterpart of that non-existence which abides in the same locus with the middle term. Looking at diagram V we find that there is co-presence of the knowable with the nameable which is not qualified by the nature of a pot (though the pot is qualified by the nature of the nameable), and the absolute non-existence, whose counterpart is the pot, abides in the same locus with the knowable, but in a different locus in respect of the pot.

सामान्याभावः ।

A Non-existence of the General Form.

Some say that even the conclusive definition given above is defective inasmuch as in going to establish the invariable concomitance of smoke with fire we notice that fires are manifold owing to the difference of their loci such as the fire of a kitchen, of a sacrificial ground, and so on. There is non-existence of these fires one by one in the locus of a particular case of smoke. This, by making fire the counterpart of that non-existence which abides in the same locus with smoke, altogether upsets the conclusive definition.

Gaṅgeśa in reply says that though in the locus of smoke there are non-existences of various fires, the natures which qualify the counterparts of those non-existences are not one and the same, *viz.* the nature of fire in general. They are different, that is, particular fires have particular natures, as for instance, the nature of the fire of a kitchen is different from that of the fire of a sacrificial ground, and so on. It is therefore necessary to admit a non-existence of fire of the general form—such as 'there is no fire' distinguished from non-existences of particular forms as 'there are not such and such fires.' A non-existence of the general form is the non-existence whose counterpart is not of a particular nature. Had the non-existence of the general form been a name merely for the sum total of particular non-existences then there would not have arisen in us a doubt of the form—'is not there a colour in air?' It is perfectly known to us that in air there are no particular colours as red, yellow, etc.; yet we entertain a doubt in our mind as to whether there is not in air a non-existence of colour of the general form.

विशेषव्याप्तिः ।

Invariable Concomitance of Special Forms.

It is to be admitted that there is non-existence of the fire of a hill in the locus of smoke of a sacrificial ground, and there is non-existence of the fire of a sacrificial ground, in the locus of smoke of a hill. There is no invariable concomitance of smoke with fire if the two occupy different loci, that is, if the locus of smoke is different from that of the fire. But nobody can deny the invariable concomitance of smoke with fire if the two occupy the same locus, *e.g.* there is an invariable concomitance of smoke of a hill with the fire of the same. Though there is no invariable concomitance of all cases of smoke with all cases of fire there is the concomitance of particular cases of smoke with their corresponding fires. The comprehensive connection of smoke with fire is not, by this particular concomitance, disturbed, for there is no smoke without fire.

This sort of invariable concomitance, called the invariable concomitance of special forms, may be defined as follows:—

1. **Invariable concomitance is the co-presence of the middle term with the major term which is different from the counterpart of that absolute non-existence which does not abide in the locus of the counterpart, but abides with the middle term in the latter's own locus.**

2. Invariable concomitance is the co-presence of the middle term with the major term the locus of which is different from that of the counterpart of the reciprocal non-existence which abides in the locus of the middle term.

3. Invariable concomitance is the connection of the middle term with the major term which is different from the counterpart of that reciprocal non-existence which abides in the same locus with the middle term.

4. Invariable concomitance may also be defined as the co-presence of the middle term with the major term when there is no condition attached to the middle term.

5. Invariable concomitance is the co-presence of the middle term with the major term which co-abides with that absolute existence whose counterpart is that which is qualified by the nature of the counterpart of the absolute non-existence abiding in the same locus with the middle term.

6. Invariable concomitance is the possession of that nature which establishes the connection (that is, brings about the co-presence) of the middle term with the major term.

व्याप्तिग्रहोपायः ।

The Means of Apprehending Invariable Concomitance.

1 Some logicians maintain that repeated observations of one thing as accompanying another thing are the means of apprehending invariable concomitance of the one with the other, *e.g.*, we apprehend the invariable concomitance of smoke with fire after we have observed repeatedly that the one accompanies the other.

Gaṅgeśa opposes the above view on the following grounds:—

(1) Of the repeated observations each one separately cannot be the cause of apprehension of invariable concomitance owing to lack of unity among the observations. As the successive observations perish quickly there is nothing which unites them together to cause in us an apprehension of invariable concomitance. The impressions left in our mind by the past observations are no doubt competent to produce recollection and recognition of equal things, but they cannot produce apprehension of invariable concomitance which involves unequal things such as cases of smoke of a kitchen, a sacrificial ground, a hill, etc.

(2) What again is the meaning of repeated observations? Does it mean observation in numerous places, or observation of numerous instances, or observation of the same instance numerous times? None of these alternatives are of any help to us in apprehending invariable concomitance. Can we establish invariable concomitance of colour with savour even if we have observed them together in numerous places? Can numer-

ous instances of colour observed along with savour in the same place (as a pot) entitle us to establish invariable concomitance between them? As regards the observation of an instance numerous times, it may be asked how many times? There is certainly no fixity as to the number of times. There cannot in fact be an invariable concomitance of a pen with a ground even if they have been observed together a hundred times.

2. Some other logicians say that a reasoning (tarka) coupled with the observation of co-accompaniment (sahacāra) is the means of our apprehending invariable concomitance. For instance, smoke is in invariable concomitance with fire inasmuch as we observe the former co-accompanied by the latter; and by applying our reasoning we further find that had there been no inseparable connection between smoke and fire, we could have seen the former without the latter, but as such a contingency is an absurdity, there is certainly an invariable concomitance of smoke with fire.

According to Gaṅgeśa the above view is untenable inasmuch as a reasoning, being itself based on an apprehension of invariable concomitance, cannot be the cause of the same. Unless a person apprehends the invariable concomitance of one thing with another thing, his reasoning, which is to reveal the absurdity of all contrary apprehensions, cannot come into operation. We could argue *ad infinitum* without being able to ascertain whether reasoning preceded the apprehension of invariable concomitance, or the latter preceded the former

व्याप्तिग्रहोपायसिद्धान्तः ।

Conclusion as to the Means of Apprehending Invariable Concomitance.

The observation of co-accompaniment attended with the absence of knowledge of exceptions is the means of apprehending invariable concomitance, *e.g.* there is invariable concomitance of smoke with fire as the former constantly accompanies the latter without any exceptions.

The knowledge of exceptions may assume the form of a certainty or doubt. In the former alternative we cannot at all apprehend invariable còncomitance, and in the latter there is great difficulty in apprehending it. Doubt arises from two sources, *viz.* sometimes from the suspicion of a condition (upādhi) and sometimes from the recognition of common properties and non-recognition of special properties. As an instance of the latter source we may point out a tall object which in the twilight produces in us a doubt as to whether it is a man or a post, because we recognise in it tallness which is the common property of a man and a post without the recognition of locomotion, etc., which are the special properties of a man. As an instance of the former source, we may cite the case of a fire which, if wet fuel is attached to it as a condition, may be inseparably connected with smoke. In asserting the invariable concomitance of smoke with fire[1] we are therefore in doubt as to whether wet fuel is not a condition.

In certain instances the doubt does not arise at all on account of absence of such defects as myopia, long distance, etc. In certain other instances the doubt is removed by the employment of reasoning. For instance, our doubt as to whether there is invariable concomitance of fire with smoke, is removed by reasoning as follows:—Had fire constantly accompanied smoke there would have been smoke in an ignited iron-ball; but in it there is fire and no smoke; so there is no invariable concomitance of fire with smoke (but there is that of smoke with fire).

The reasoning which is to remove doubt, is to be carried on only as long as the doubt is not removed. The charge of *regressus ad infinitum* brought against the reasoning employed to establish invariable concomitance, does not apply to the present case in which reasoning ceases with the disappearance of doubt and does not continue up to the commencement of the processes establishing invariable concomitance.

तर्कः ।

Reasoning (or Confutation).

The processes of reasoning (or confutation) may be illustrated as follows:—

Interrogation.—Can smoke abide without fire?

Reasoning.—If smoke could abide without fire, it would not have been a product of fire.

Re-interrogation.—Is smoke a product of fire?

Reasoning.—If smoke were produced neither from fire nor from non-fire, then it would have been a non-product. But it is not so.

Doubt.—Smoke then may have been produced either from fire or without a cause.

Incompatibility.—Why a person, who thus indulges in doubt, is nevertheless led on to activity? If he doubts as to whether an effect may not be produced without a cause, why does he seek for a fire to obtain smoke, and for food to get satisfaction? His own activity indicates that he is well aware of the connection between a cause and its effect. Why does he then entertain doubt ? It is incompatible with his own activity. There is no doubt that smoke as an effect cannot be produced without a cause. Smoke is in fact a product of fire without which it cannot abide.

---

[1] **There is invariable concomitance of smoke with fire but not of fire with smoke; that is, wherever there is smoke there is fire, but not *vice versa.***

व्याप्त्यनुगमः ।

Comprehensiveness of Invariable Concomitance.

Comprehensiveness (*anugama*) is the nature which exhibits in one form all the various kinds of invariable concomitance previously defined. The invariable concomitance involving reciprocal non-existence is a comprehensive one, and is on account of shortness to be accepted as the cause of inference. Of the five provisional definitions of invariable concomitance the third and the fifth, and of those of the invariable concomitance of a special form, the second and the third involve reciprocal non-existence. The conclusive definition of invariable concomitance may also be so modified as to involve reciprocal non-existence. Of these the third definition of the invariable concomitance of a special form is by far very short.

सामान्यलक्षणा ।

Intercourse whose Character is General.

We observed that there is invariable concomitance of smoke of a kitchen with fire of the same, and similarly there is invariable concomitance of smoke of a sacrificial ground with fire of the same. Though we thus observe that there is invariable concomitance of particular cases of smoke with particular cases of fire, we cannot infer fire on a hill by seeing smoke there, until we can establish the invariable concomitance of all cases of smoke with all cases of fire. We can establish the invariable concomitance of all cases of smoke with all cases of fire if we assume the knowledge of smokeness (the generic nature of smoke) as the intercourse for our perception of all cases of smoke, and the knowledge of fireness (the generic nature of fire) as the intercourse for our perception of all cases of fire. This sort of intercourse which consists of the knowledge of a generic nature is called an intercourse whose character is general. It is described by some logicians as an ordinary intercourse of particularity while others describe it as a transcendent intercourse. The logicians, who hold the first view, say that in perceiving a particular smoke by means of our eye there is the intercourse of union, while in perceiving smokeness there is the intercourse, of united-inherence, and in perceiving all cases of smoke (of all times and all places) through the knowledge of smokeness there is the intercourse of particularity. All these cases of intercourse are ordinary ones.

The logicians, who hold the second view, say that in the perception of a particular smoke and smokeness there are no doubt ordinary intercourses of union and united-inherence respectively, but in the perception of all cases of smoke through the knowledge of smokeness the intercourse is a transcendent one. It cannot be an ordinary intercourse because of all cases of smoke the present ones can be perceived by our eyes independent of the knowledge of smokeness, while the past and future cases of smoke with which our eyes are not connected, cannot be perceived at all through any of the six ordinary intercourses. Therefore the intercourse, *viz.* the knowledge of smokeness, through which we perceive all cases of smoke, is a transcendent one whose character is general. Hence the apprehension of invariable concomitance of a particular case of smoke with a particular case of fire refers through the intercourse whose character is general to all cases of smoke and all cases of fire.

सामान्यलक्षणासिद्धान्तः ।

Conclusion about the Intercourse whose Character is General.

If the intercourse whose character is general, were not accepted, there could not arise any doubt as to whether there were instances in which smoke (the middle term) did not accompany fire (the major term). As to the cases of smoke which were present, we could perceive their co-accompaniment with cases of fire, and they could leave no room for doubt regarding any case of exception. As for the past and future cases of smoke, or the cases of smoke of distant places, we could not know them as they were beyond the range of our eyes. In the absence of knowledge of those cases of smoke it would be impossible for us to entertain any doubt as to whether they constantly accompanied fire. Doubt being impossible there could not be any reasoning employed to remove it. Hence we could not apprehend an invariable concomitance. But if the intercourse whose character is general, is admitted, we can explain the perception of all cases of smoke through the intercourse of smokeness. It is possible for doubt to arise in respect of some of these cases of smoke through non-recognition of their special properties. We must therefore admit intercourse whose character is general.

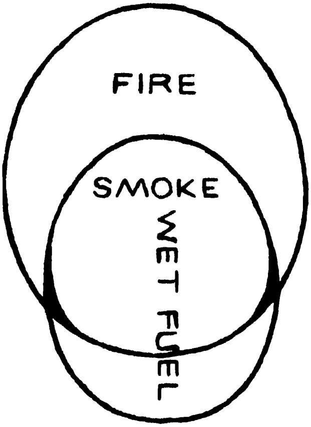
उपाधिवादः ।

The Conditional Middle Term.

The middle term, if it is to be in invariable concomitance with the major, should be devoid of condition, that is, should be unconditional. A condition (upādhi) is that which constantly accompanies the major term, but does not always accompany the middle term, *e.g.*

The hill is full of smoke
because it is full of fire (nourished by wet fuel).

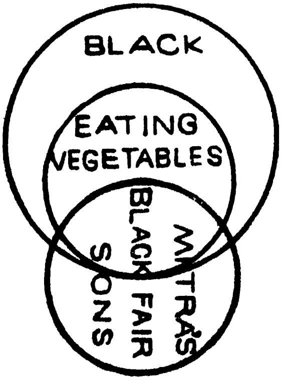
Diagram VI.



Here smoke is the major term fire is the middle term and wet fuel is a condition. The wet fuel constantly accompanies smoke, but does not always accompany fire. For instance, the fire in an ignited iron-ball is not accompanied by wet fuel at all.

"Accompanying the major term" signifies the state of not being the counterpart of that absolute non-existence which abides in the locus of the major term, that is, the state of not being absent from the locus of the major term. "Not accom-

Diagram VII.



He is black,
because he is a son of Mitrā
(who eats vegetables).

panying the middle term" is the state of being the counterpart of that absolute non-existence which abides in the locus of the middle term, that is, the state of being absent from the locus of the middle term. In diagram VI "wet fuel" is not absent from the region of smoke, but it is present in some regions of fire and absent from the remaining regions of the same.

Mitrā has many sons of whom one is black, and the rest fair-complexioned. The son conceived at a time when Mitrā ate vegetables, is black, but other sons that were conceived while she did not eat vegetables but drank milk, are fair-complexioned. In diagram VII we find that "eating vegetables" is a condition which accompanies Mitrā's black son, but does not accompany her fair-complexioned sons.

Some say that "eating vegetables" is not a condition inasmuch as it does not always accompany blackness; for instance, the blackness of a pot is not the result of eating vegetables. Gaṅgeśa meets the objection by saying that the blackness marking Mitrā's son is not of the same nature as the blackness which abides in a pot. A condition is, according to him, to be clearly defined as follows:—

A condition is that which constantly accompanies the major term, but does not always accompany the middle term in respect of an entity of a fixed nature.

Condition is of two kinds, *viz.* (1) sure, and (2) suspected. A condition is said to be sure when we know with certainty that it constantly accompanies the major term, but does not always accompany the middle term; and it is said to be suspected when there is doubt as to its accompanying the major term or as to its not accompanying the middle term. An instance of a suspected condition is given below:—

> The earth has a maker,
> because it is a product (caused by a body).

Here "caused by a body" is a condition which constantly accompanies a maker (if the maker is a person, but not if the maker is a collection of atoms), but does not always accompany a product (for instance, a product like a pot is caused by a body, but a product like a lightning is not so caused). The condition, *viz.* "causing by a body" is therefore a suspected one.

A condition is not in itself a defect, but its attachment to the middle term indicates that that term is erratic and the conclusion drawn therefrom wrong.

पक्षता ।

The State of Being the Locus or Minor Term.

The state of being the *locus* or the *minor term* (pakṣatā) has been defined by some logicians as the state in which it is doubtful whether the major term abides in it or not. Seeing that the connection of the major term with the locus or minor term, may not necessarily involve a doubt, Gaṅgeśa prefers to define the minor term as that whose connection with the major term is not known with certainty in consequence of the absence of a desire to know the connection, *e.g.* in the proposition "the hill is full of fire," the hill is the minor term whose connection with fire was hitherto neither investigated nor known. The minor term is so called not merely if there is an absence of knowledge of its connection with the major term, but also if the absence of knowledge is due to the absence of a desire to arrive at the knowledge. We cannot treat the minor term as such merely by establishing with it a connection of the major term if that connection has already been known, but we shall be justified in treating it as the minor term if there is in us a desire again to establish the connection.

A *similar locus, a homogeneous, affirmative or positive example* (sapakṣa) is that in which the major term is known with certainty to abide, *e.g.* the hill is full of fire, because it is full of smoke, as a *kitchen*.

A *dissimilar locus*, a *heterogeneous, or negative example* (vipakṣa) is that in which the major term is known not to abide, *e.g.* the hill is full of fire, because it is full of smoke; where there is no fire, there is no smoke, as a lake.

परामर्शः ।

Consideration or Knowledge of Premisses.

Consideration (parāmarśa) is the knowledge that the middle term in invariable concomitance with the major term abides in the minor, *e.g.*

The hill is full of fire,
because it is full of smoke.

Here consideration consists of the knowledge that in the hill abides smoke which is in invariable concomitance with fire. This knowledge (consideration) is the cause of inference.

The ancients held that smoke actually perceived together with the knowledge that it is in invariable concomitance with fire was the cause of inference. But Gaṅgeśa opposes this view by saying that if smoke actually perceived were the cause, then inference could not take place from smoke that had been destroyed or that had not yet arrived. On hearing that there will be smoke here, a person can at once infer that there will be fire here, although he does not actually perceive smoke which is not present. It is therefore not smoke itself but the knowledge of it that is the cause of the inference. In other words the middle term actually perceived together with the knowledge that it is in invariable concomitance with fire, is not the cause of inference, but consideration or knowledge that in the minor term abides the middle term which is, in invariable concomitance with the major term, is such a cause.

केवलान्वय्यनुमानम् ।

An Exclusively Affirmative Inference.

Inference is of three kinds, *viz.* (1) an exclusively affirmative inference (kevalānvayyanumānam), (2) an exclusively negative inference (kevalavyatirekyanumānam), and (3) an affirmative-negative inference (anvaya-vyatirekyanumānam).

The exclusively affirmative is an inference in which there is no negative example. It may also be defined as an inference in which the major term is not the counterpart of that absolute non-existence which has an abode; or as an inference in which there is no non-presence of the major term, *e.g.*

This is nameable,
because it is knowable—(*vide* diagram II).

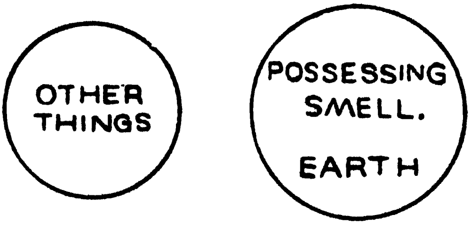
केवल व्यतिरेक्यनुमानम् ।

An Exclusively Negative Inference.

An exclusively negative inference is the inference in which the major term has no affirmative example. It may also be defined as the inference in which the major term does not abide in anything else than in the minor term, *e.g.*

The earth is different from other things,
because it possesses smell.

Diagram VIII.



अन्वयव्यतिरेक्यनुमानम् ।

An Affirmative-Negative Inference.

The affirmative-negative is an inference in which the major term has both affirmative and negative examples, *e.g.*

The hill is full of fire,
because it is full of smoke,
as a kitchen and not as a lake.

अर्थापत्तिः ।

Presumption.

The Mīmāṁsakas say that presumption (arthāpatti) is a separate means of knowledge. On hearing that "Devadatta who is fat does not eat in the day" we at once conclude that he eats in the night. Since a person cannot become fat unless he eats either in the day or in the night, and since he does not eat in the day it follows by presumption that he eats in the night.

Gaṅgeśa does not admit presumption to be a separate means of knowledge, but includes it in the negative inference[1] which establishes the absence of the middle term through the absence of the major term. Here the absence of eating in the night would have been followed by the absence of that fatness which is attended with non-eating in the day.

स्वार्थानुमानम् ।

Inference for One's Self.

Inference is of two kinds: (1) inference for one's self (svārthānumāna) and (2) inference for the sake of others (parārthānumāna). A person having himself repeatedly observed in the kitchen and other places the invariable concomitance of smoke with fire, goes near a hill and sees smoke on it. He recollects that wherever there is smoke there is fire, and thereupon knowledge arises in him that "this hill has smoke which is in invariable concomitance with fire." This knowledge is called "consideration of the sign" (liṅgaparāmarśa) or simply "consideration" (parāmarśa) from which follows the knowledge that "this hill has fire" which is called inferential conclusion (anumiti). This is the process of inference for one's self.

परार्थानुमानम् ।

Inference for the Sake of Others.

When a person having inferred fire from smoke demonstrates it to others by the employment of a syllogism, it is called "an inference for the sake of others." The process of this inference is as follows:—

---

[1] A person to be fat must take his food either in the day or in the night—(A proposition).
Devadatta who is fat does not take his food in the day—(E proposition).
Therefore Devadatta must take his food in the night. (This is a disjunctive categorical syllogism.)

1. The hill has fire,
2. Because it has smoke,
3. All that has smoke has fire as a kitchen,
4. This hill has smoke,
5. Therefore this hill has fire.

The demonstration given above produces in other people "consideration of the sign" which necessarily makes them admit that the hill has fire

न्यायः ।

Syllogism.

Syllogism (nyāya) is the name for a collection of five sentences which give rise to knowledge that produces consideration. It is set forth as follows:—

1. This hill is full of fire—proposition
2. Because it is full of smoke—reason.
3. All that is full of smoke is full of fire as a kitchen—example.
4. This hill is full of smoke—application.
5. Therefore this hill is full of fire—conclusion.

After these five sentences have been employed there arises in the mind of the listener consideration of the form, 'this hill is full of smoke, which is in invariable concomitance with fire,' from which follows the conclusion "this hill is full of fire." Syllogism is therefore the name for the entire collection of five sentences each of which is called a part or member.

अवयवाः ।

Parts of a Syllogism.

A part or member (avayava) is a sentence that gives rise to knowledge which contributes to the production of an entire knowledge which produces consideration. On the employment of five sentences there arises at first knowledge from each of them separately. Then there arises a collective knowledge from the five sentences combined together. This collective knowledge which produces consideration is based on each of the five sentences called a part or member. The parts are five, *viz.* (1) a proposition (2) a reason, (3) an example, (4) an application, and (5) a conclusion.

प्रतिज्ञा ।

The Proposition.

The proposition (pratijñā) is a sentence which causes knowledge whose object is the same as that of the conclusion and which contributes to the production of the entire knowledge which produces consideration, e.g.

This hill is fiery.

It may also be defined as a sentence which gives rise to an inquiry necessitating the mention of the reason, *e.g.* this hill is fiery (why so ? because it is smoky).

हेतुः ।

The Reason or Middle Term.

The reason or middle term (hetu) is a word, with the instrumental or ablative suffix attached to it, which produces knowledge whose object is not the probandum (major term) but which contributes to the production of the entire knowledge that gives rise to consideration *e.g.* because it is smoky (*i.e.* by or from smokiness).

The reason is of two kinds : (1) the affirmative (anvayī) and (2) the negative (vyatirekī). The affirmative reason is a member with the instrumental or ablative suffix attached to it, which produces knowledge that necessitates the mention of the member expressive of an affirmative invariable concomitance, *e.g.* because it is smoky (that is, by or from smokiness), all that is smoky being fiery as a kitchen. The negative reason is a member with the instrumental or ablative suffix attached to it, which produces knowledge that necessitates the mention of the member expressive of a negative invariable concomitance, *e.g.* because it is smoky (that is, by or from smokiness), all that is not fiery being not smoky as a lake

उदाहरणम् ।

Example.

The example (udāharaṇa) is a word which while producing knowledge of connection of the form that the locus of the middle term is constantly occupied by the major term, causes another knowledge which proceeds from the sentence expressive of consideration,[1] *e.g.*

All that is smoky is fiery as a kitchen
[So is this hill smoky].

उपनयः ।

Application.

The application (upanaya) is a member which produces consideration, *e.g.* [All that is smoky is fiery]. So is this hill smoky.

---

[1] Application (upanaya) is the sentence expressive of consideration.

निगमनम् ।

Conclusion.

Conclusion (nigamana) is a sentence which, while causing knowledge which gives rise to consideration, produces knowledge of the major term as indicated by that of the middle term through its invariable concomitance with the major term and its nature of abiding in the minor term, *e.g.*

[In this hill there is smoke which is in invariable concomitance with fire.] Therefore in this hill there is fire, or therefore this hill is fiery.

हेत्वाभासाः ।

Fallacies.

हेत्वाभास सामान्य निरुक्तिः

A General Definition of Fallacy.

A person can ascertain truths and achieve victory by exposing fallacies in the argument of his opponent. It is therefore necessary to define a fallacy which in Sanskrit is called *hetvābhāsa*, a semblance of reason, a fallacy of reason or a fallacious reason.

A fallacy is an object of knowledge which obstructs an inference. It is in brief a defective reason. There are five kinds of fallacy or defective reason, *viz.* (1) the erratic or uncertain (savyabhicāra or anaikānta), (2) the contradictory (viruddha), (3) the counterbalanced (satpratipakṣita), (4) the unproved or inconclusive (asiddha), and (5) the incompatible (bādhita). The defects involved in the above reasons are respectively the following :—(1) the erraticalness or uncertainty (vyabhicāra), (2) contradiction (virodha), (3) counterbalance (satpratipakṣa), (4) absence of proof or inconclusiveness (asiddhi), and (5) incompatibility (bādha).

सव्यभिचारः ।

The Erratic Reason.

The ERRATIC (savyabhicāra) is a reason or middle term in which abides a character the possession of which causes that presence of two alternatives which produces doubt in the probandum or major term. The nature refers to the constant accompaniment with, or absence from, both the major term and its non-existence. The erratic reason is subdivided as (1) that which is too general (sādhāraṇa), (2) that which is non-general or not general enough (asādhāraṇa), and (3) that which is non-exclusive (anupasaṁhārī).

A reason is said to be *too general* if it abides in the locus of the major term as well as in that of its absence, *e.g.*

This hill is smoky,
because it is fiery.

Here the reason "fire" abides in the region of smoke (as in a kitchen) as well as in the region of the absence of smoke (as in an ignited iron-ball).

A reason is said to be *non-general* or *not general enough* if it abides neither in the locus of the major term nor in that of its absence, *e.g.*

This hill is full of fire,
because it is full of ether.

Here the reason is ether which has no locus. Ether abides neither in the locus of fire nor in that of the absence of fire.

A reason is said to be *non-exclusive* if it is destitute of an example, affirmative or negative, *e.g.*

All things are impermanent,
because they are knowable.

Here we cannot cite any example as "all things" is the subject.

विरुद्धः ।

The Contradictory Reason.

The contradictory (viruddha) is a reason which is the counterpart of that non-existence which constantly accompanies the major term, *e.g.*

This hill is full of fire,
because it is full of water

Here the reason is contradictory inasmuch as water is the counterpart of the *non-existence of water,* which constantly accompanies fire.

[The contradictory may also be defined as a reason (middle term) which is constantly accompanied by the absence of the probandum (major term)].

सत्प्रतिपक्षितः ।

The Counterbalanced Reason.

If, at the time of the consideration of a reason which seeks to establish the *existence* of the probandum or major term, there occurs the consideration of another reason which seeks to establish the *non-existence* of that term, the first reason is a counterbalanced one, nay both the reasons are counterbalanced, *e.g.*

called "an inference for the sake of others." The process of this inference is as follows:—

1. The hill has fire,
2. Because it has smoke,
3. All that has smoke has fire as a kitchen,
4. This hill has smoke,
5. Therefore this hill has fire.

The demonstration given above produces in other people "consideration of the sign" which necessarily makes them admit that the hill has fire

न्यायः ।

Syllogism.

Syllogism (nyāya) is the name for a collection of five sentences which give rise to knowledge that produces consideration. It is set forth as follows :—

1. This hill is full of fire—proposition
2. Because it is full of smoke—reason.
3. All that is full of smoke is full of fire as a kitchen—example.
4. This hill is full of smoke—application.
5. Therefore this hill is full of fire—conclusion.

After these five sentences have been employed there arises in the mind of the listener consideration of the form, 'this hill is full of smoke, which is in invariable concomitance with fire,' from which follows the conclusion "this hill is full of fire." Syllogism is therefore the name for the entire collection of five sentences each of which is called a part or member.

अवयवाः ।

Parts of a Syllogism.

A part or member (avayava) is a sentence that gives rise to knowledge which contributes to the production of an entire knowledge which produces consideration. On the employment of five sentences there arises at first knowledge from each of them separately. Then there arises a collective knowledge from the five sentences combined together. This collective knowledge which produces consideration is based on each of the five sentences called a part or member. The parts are five, *viz.* (1) a proposition, (2) a reason, (3) an example, (4) an application, and (5) a conclusion.

प्रतिज्ञा ।

The Proposition.

The proposition (pratijñā) is a sentence which causes knowledge whose object is the same as that of the conclusion and which contributes to the production of the entire knowledge which produces consideration, *e.g.*

This hill is fiery.

It may also be defined as a sentence which gives rise to an inquiry necessitating the mention of the reason, *e.g.* this hill is fiery (why so ? because it is smoky).

हेतुः ।

The Reason or Middle Term.

The reason or middle term (hetu) is a word, with the instrumental or ablative suffix attached to it, which produces knowledge whose object is not the probandum (major term) but which contributes to the production of the entire knowledge that gives rise to consideration, *e.g.* because it is smoky (*i.e.* by or from smokiness).

The reason is of two kinds : (1) the affirmative (anvayī) and (2) the negative (vyatirekī). The affirmative reason is a member with the instrumental or ablative suffix attached to it, which produces knowledge that necessitates the mention of the member expressive of an affirmative invariable concomitance, *e.g.* because it is smoky (that is, by or from smokiness), all that is smoky being fiery as a kitchen. The negative reason is a member with the instrumental or ablative suffix attached to it, which produces knowledge that necessitates the mention of the member expressive of a negative invariable concomitance, *e.g.* because it is smoky (that is, by or from smokiness), all that is not fiery being not smoky as a lake.

उदाहरणम् ।

Example.

The example (udāharaṇa) is a word which while producing knowledge of connection of the form that the locus of the middle term is constantly occupied by the major term, causes another knowledge which proceeds from the sentence expressive of consideration,[1] *e.g.*

All that is smoky is fiery as a kitchen.
[So is this hill smoky].

उपनयः ।

Application.

The application (upanaya) is a member which produces consideration, *e.g.* [All that is smoky is fiery]. So is this hill smoky.

---

[1] Application (upanaya) is the sentence expressive of consideration.

निगमनम् ।

Conclusion.

Conclusion (nigamana) is a sentence which, while causing knowledge which gives rise to consideration, produces knowledge of the major term as indicated by that of the middle term through its invariable concomitance with the major term and its nature of abiding in the minor term, *e.g.*

[In this hill there is smoke which is in invariable concomitance with fire.] Therefore in this hill there is fire, or therefore this hill is fiery.

हेत्वाभासाः ।

Fallacies.

हेत्वाभास सामान्य निरुक्तिः ।

A General Definition of Fallacy.

A person can ascertain truths and achieve victory by exposing fallacies in the argument of his opponent. It is therefore necessary to define a fallacy which in Sanskrit is called *hetvābhāsa*, a semblance of reason, a fallacy of reason or a fallacious reason.

A fallacy is an object of knowledge which obstructs an inference. It is in brief a defective reason. There are five kinds of fallacy or defective reason, *viz.* (1) the erratic or uncertain (savyabhicāra or anaikānta), (2) the contradictory (viruddha), (3) the counterbalanced (satpratipakṣita), (4) the unproved or inconclusive (asiddha), and (5) the incompatible (bādhita). The defects involved in the above reasons are respectively the following :—(1) the erraticalness or uncertainty (vyabhicāra), (2) contradiction (virodha), (3) counterbalance (satpratipakṣa), (4) absence of proof or inconclusiveness (asiddhi), and (5) incompatibility (bādha).

सव्यभिचारः ।

The Erratic Reason.

The ERRATIC (savyabhicāra) is a reason or middle term in which abides a character the possession of which causes that presence of two alternatives which produces doubt in the probandum or major term. The nature refers to the constant accompaniment with, or absence from, both the major term and its non-existence. The erratic reason is subdivided as (1) that which is too general (sādhāraṇa), (2) that which is non-general or not general enough (asādhāraṇa), and (3) that which is non-exclusive (anupasaṁhārī).

A reason is said to be *too general* if it abides in the locus of the major term as well as in that of its absence, *e.g.*

This hill is smoky,
because it is fiery.

Here the reason "fire" abides in the region of smoke (as in a kitchen) as well as in the region of the absence of smoke (as in an ignited iron-ball).

A reason is said to be *non-general* or *not general enough* if it abides neither in the locus of the major term nor in that of its absence, *e.g.*

This hill is full of fire,
because it is full of ether.

Here the reason is ether which has no locus. Ether abides neither in the locus of fire nor in that of the absence of fire.

A reason is said to be *non-exclusive* if it is destitute of an example, affirmative or negative, *e.g.*

All things are impermanent,
because they are knowable.

Here we cannot cite any example as "all things" is the subject.

विरुद्धः ।

The Contradictory Reason.

The contradictory (viruddha) is a reason which is the counterpart of that non-existence which constantly accompanies the major term, *e.g.*

This hill is full of fire,
because it is full of water.

Here the reason is contradictory inasmuch as water is the counterpart of the *non-existence of water*, which constantly accompanies fire.

[The contradictory may also be defined as a reason (middle term) which is constantly accompanied by the absence of the probandum (major term)].

सत्प्रतिपक्षितः ।

The Counterbalanced Reason.

If, at the time of the consideration of a reason which seeks to establish the *existence* of the probandum or major term, there occurs the consideration of another reason which seeks to establish the *non-existence* of that term, the first reason is a counterbalanced one, nay both the reasons are counterbalanced, *e.g.*

One reason—Sound is eternal because it is audible.
Opposite reason—Sound is non-eternal because it is a product.

In the above instances as the consideration of both sides prevails, there is no real inference. The inference from one reason being of as much force as that from the other reason, the two inferences neutralize each other.

असिद्धः ।

The Unproved Reason.

The unproved (asiddha) reason is of three kinds: (1) unproved on the part of its locus or the subject (āśrayāsiddha), (2) unproved with regard to its own nature (svarūpāsiddha), and (3) unproved in respect of accompaniment (vyāpyatvāsiddha).

आश्रयासिद्धः ।

A Reason which is Unproved on the Part of its Locus.

A reason is said to be unproved on the part of its locus, if the characteristic distinguishing the locus does not belong to it, *e.g.*

This golden hill is fiery,
because it is smoky.

[Here the reason "smoke" is unproved as its locus is unreal on account of goldness not belonging to a hill].

स्वरूपासिद्धः ।

A Reason which is Unproved with regard to its own Nature.

A reason is said to be unproved with regard to its own nature, if it does not abide in the locus or minor term, *e.g.*

The lake is fiery,
because it is smoky.

[Here the reason is unproved as smoke from its very nature does not abide in a lake].

व्याप्यत्वासिद्धः ।

A Reason which is Unproved in Respect of Accompaniment.

A reason is said to be unproved in respect of constant accompaniment, if its generic nature is not useful in establishing its invariable concomitance with the major term. It is subdivided as follows :—

(*a*) Unproved on the part of the major term (sādhyāsiddhi) which occurs when there is a useless adjective appended to that term, *e.g.*

This hill is full of golden fire,
because it is full of smoke. [‘ Golden ’ is useless].

(*b*) Unproved on the part of the reason (hetvasiddhi) which occurs when there is a useless adjective appended to it, *e.g.*

This hill is full of fire,
because it is full of blue smoke. [‘ Blue’ is useless].

(*c*) Unproved in respect of invariable concomitance (Vyāptyasiddhi) which occurs when there is a condition attached to the reason, *e.g.*

This hill is full of smoke,
because it is full of fire [nourished by wet fuel, which is a condition attached to the reason].

बाधितः ।

The Incompatible Reason.

An incompatible reason (bādhita) occurs when there is the knowledge that the major term which is assigned to the minor term does not really abide in it, *e.g.*

Fire is cold,
because it is a substance.

The incompatible reason, which is of ten kinds, occurs under the following circumstances :—

1. The minor term being incompatible with perception (pakṣaḥ pratyakṣa-bādhitaḥ), *e.g.*

   A pot is all-pervading,
   because it is existent.

2. The minor term being incompatible with inference (pakṣaḥ anumāna-bādhitaḥ), *e.g.*

   An atom has parts,
   because it has a shape. [An atom has in fact no shape and no parts].

3. The minor term being incompatible with verbal testimony (pakṣaḥ śabda-bādhitaḥ), *e.g.*

   The golden mountain (Meru) is stony,
   because it is a mountain.

4. The minor term being incompatible with perception which establishes the counterpart of the major term (pakṣaḥ sādhya-pratiyogi-pratyakṣa-bādhitaḥ), *e.g.*

   Fire is non-warm,
   because it is a product.

5. The minor term being incompatible with the inference which establishes the counterpart of the major term (pakṣaḥ sādhya-pratiyogyanumāna bādhitaḥ), *e.g.*

   Sound is inaudible,
   because it is a quality (of ether).

6. The minor term being incompatible with comparison which establishes the counterpart of the major term (pakṣaḥ sādhya-pratiyogyupamāna-bādhitaḥ), *e.g.*

   Bos gavaeusness is not the connotation of the term bos gavaeus,
   because it is a general notion.

7. The minor term being incompatible with the evidence which is analogous to the evidence that establishes the major term (pakṣaḥ sādhya-grāhaka-pramāṇa-jātīya-pramāṇa-viruddhaḥ), *e.g.*

   The skull of a deceased person is pure,
   because it is the limb of a being that had life, as a conch-shell.

[The scripture declares a conch shell to be pure but not the skull of a deceased person.]

8. The minor term being incompatible with perception which establishes the middle term (pakṣaḥ hetu-grāhaka-pratyakṣa-bādhitaḥ), *e.g.*

   Water and air are warm,
   because they are possessed of touch
   unlike that of the earth.

9. The minor term being incompatible with inference which establishes the middle term (pakṣaḥ hetu-grāhakānumāna-bādhitaḥ), *e.g.*

   The mind is all-pervading,
   because it is a seat of union which is
   a non-coexistent cause of knowledge.

10. The minor term being incompatible with verbal testimony which establishes the middle term (pakṣaḥ hetu-grāhaka-śabda-bādhitaḥ), *e.g*

The Rājasūya sacrifice should be
celebrated by Brāhmaṇas,
because it is the means of conquering heaven.

[From verbal testimony the Rājasūya sacrifice is ascertained to be a duty of the Kṣatriyas and not of the Brāhmaṇas.]

हेत्वाभासानामसाधकतासाधकत्वनिरूपणम् ।

Fallacies are Serviceable as they Point out Inefficiency.

A fallacy when exposed is a good reply to an opponent whose argument is pointed out by it to be inefficient. Quibbles and far-fetched analogies are not good replies as they are of no use in this respect. The far-fetched analogies are moreover self-destructive.

ईश्वरानुमानम् ।

Inference of God.

By inference we can prove the existence of God, the maker of the universe. The inference employed for this purpose runs as follows :—

The universe has a maker
because it is a product as a pot

The causes which operate in the case of a product may be stated thus :—

There must be (1) a direct knowledge (perception) by an agent himself of the materials which constitute a product, (2) a desire on the part of the agent to make it, and (3) an act of making it.

For instance, in making a product called a pot (1) there are in the potter a perception of the pieces that constitute a pot, (2) a desire on his part to make it, and (3) his actual making of it.

Similarly in the case of a product called a binary atomic compound (dvyaṇuka) there must be (1) perception by an agent of the atoms which constitute the compound, (2) a desire in him to make it, (3) and his actual making of it. Now atoms are supersensuous and as such cannot be perceived by man. Hence the maker of the binary atomic compound is an agent who is not man but God.

Book III.

उपमान खण्डम्—Comparison.

A man, who does not know the signification of the word bos-gavaeus, hearing from an elder that the word bos-gavaeus signifies an animal which is like a cow, goes into a forest where he sees an animal like a cow. Recollecting the instructive assertion of the elder he institutes a comparison by which he arrives at the conclusion that the animal which he sees is the thing signified by the word bos-gavaeus. The means by which this conclusion has been arrived at is called comparison (upamāna). This means is the knowledge of likeness between a cow and a bos-gavaeus. The word comparison is ordinarily taken to signify the whole process.

How knowledge is derived through comparison.

The intercourse or operation (vyāpāra) in the case of comparison consists in the recollection of the instructive assertion of the elder, *viz.* that the word bos-gavaeus signifies an animal which is like cow. The result of comparison (upamiti) is the knowledge of the relation of a name to something so named.

Likeness explained.

The Mīmāṁsakas maintain that likeness (sādṛśya) is a distinct object which is not included in the seven categories of the Vaiśeṣikas. The signification of the word bos-gavaeus is, according to them, an animal which possesses likeness to a cow. Gaṅgeśa opposes this view by saying that it is cumbersome. A thing is said to bear likeness to another thing if it while possessing the special property of the latter thing is different from the same in the generic nature. Such being the definition of likeness we have to admit an infinite number of likenesses corresponding to the thing to which they refer. The real signification of the word bos-gavaeus, according to Gaṅgeśa, is not an animal which possesses likeness to a cow but an animal which possesses the generic nature of a bos-gavaeus (that is, which is a type of all bos-gavaeuses). Hence the result of comparison consists of knowledge of the relation between the word bos-gavaeus and the animal which possesses the generic nature of a bos-gavaeus.

Comparison is not perception.

Some say that the knowledge of signification of the word bos-gavaeus is derived through perception. This is absurd. Though the relation between the word bos-gavaeus and the animal called bos-gavaeus may be perceived in a particular case with which our eyes are in union, it is impossible for us to perceive such a relation in other cases which are beyond our eyes. Therefore the knowledge of signification of the word bos-gavaeus is not derived through perception but through a separate means of knowledge called comparison.

Comparison is not inference.

The knowledge of signification of the word bos-gavaeus can neither be derived through inference inasmuch as in the case of comparison knowledge is derived through the knowledge of likeness independent of the knowledge of invariable concomitance which is indispensable to an inference. Moreover in the case of knowledge derived through comparison there is in us a self-consciousness of the form "I compare" but not of the form "I infer."

Book IV.

शब्द प्रमाणम्—Verbal Testimony.

शब्द निरूपणम् ।

Definition of Verbal Testimony.

A speech[1] (śabda) is a means of valid knowledge if it is uttered by a person as an outcome of his true knowledge of its meaning, *e.g.* the speech, *viz* a horse runs, is a means of valid knowledge if it has been uttered by a person who knows its meaning. The means by which or the process in which the valid knowledge is derived is called verbal testimony (śabda-pramāṇam). A speech uttered by a person who does not know its meaning may produce knowledge the validity of which is uncertain.

शाब्द बोधः ।

Verbal Knowledge.

Any knowledge derived from a speech is called verbal knowledge (śābda bodhaḥ). It is the knowledge of the mutual connection of things signified by words which possess expectancy, consistency, contiguity and potentiality, and convey intention. The process in which the verbal knowledge is produced is described as follows:—

A speech—ghaṭaḥ asti (there is a pot).

(i.) At first there is the *hearing*[2] (śabdasya śravaṇam) of *words* in the speech, *viz.* ghaṭa + ḥ + as + ti (there + is + a + pot).

(ii.) Then there is the *recollection of things* (arthasya smaraṇam) signified by the words, *viz.* the recollection of "pot" signified by the word "ghaṭa," of "one" signified by "ḥ" (a modification of the first case-ending *su*), of "existing" signified by "as" and of "the state of abiding" signified by "ti" (a verbal termination in the third person, singular number, present tense).

(iii.) Afterwards there is the knowledge of the *mutual*

---

[1] "Speech" signifies "the knowledge of speech."

[2] The words need not always be actually heard but sometimes we may recollect them from a written statement.

connection of things thus recollected (saṁsarga-bodhaḥ), that is, the knowledge that 'pot' as qualified by oneness is an abode of existence. The knowledge in this third step is specially called a verbal knowledge.

(iv.) Lastly there is *self-consciousness* (anuvyavasāya) of the knowledge in the following form: "I am the possessor of the knowledge of pot which as qualified by oneness is an abode of existence."

शब्द प्रामाण्यवादः ।

Speech as a Means of Valid Knowledge.

Can it be denied that speech is a means of valid knowledge?

A means otherwise called an instrument (karaṇa) is that cause which when brought into operation necessarily produces its effect. A speech is not, according to the Buddhists, such a means inasmuch as it does not, even when uttered by a person who knows its meaning, produce knowledge unless it is attended with expectancy, consistency, etc. Therefore "a speech is not," say the Buddhists. "a means of valid knowledge."

A speech is indeed a means of valid knowledge. Gaṅgeśa opposes the above view by saying that if the Buddhists do not admit a speech to be a means of valid knowledge whence do they derive the validity of their own speech, *viz.* "a speech is not a means of valid knowledge." The verbal testimony being denied, their speech cannot be proved as valid and as such cannot be advanced against any party. On the contrary if their speech is admitted as valid they will have to abandon their contention that "a speech is not a means of valid knowledge." The contention of the Buddhists is therefore baseless, and a speech is indeed a means of valid knowledge. But the speech, if it is to be a means of valid knowledge, must not be a bare one: it should be attended with expectancy, consistency, etc.

The speech is mentioned as the means or instrument because it is the main cause in the production of valid knowledge, while expectancy, consistency, etc., are mere attendant causes or conditions. It should be stated here that only one cause without attendant conditions cannot produce any effect.

Is verbal testimony included in perception?

The Buddhists, while not claiming their speech to be valid, say that it serves at any rate to produce in us a mental perception of the form "a speech is not a means of valid knowledge" by causing the recollection of things signified by it. When we hear the speech, *viz.* a speech is not a means of valid knowledge. there arises in us a knowledge (recollection) of the things signified by it, and through the intercourse whose character is knowledge we actually perceive the things in our mind. The function of verbal testimony being thus performed by mental perception, there is no necessity for assuming the former as a distinct means of valid knowledge.

Verbal testimony is not included in perception.

Gaṅgeśa holds that a speech which is attended with expectancy, etc., and produces recollection of things signified by it, must be accepted as a means of valid knowledge quite distinct from perception. Just as in the perception of a colour our eye is the means or instrument, its union with the colour is the intercourse. and the perceptual knowledge is the result, so in the verbal testimony a speech is the means or instrument, the recollection of things signified by it is the intercourse and the verbal knowledge is the result. A speech therefore serves the same purpose in verbal testimony as the sense-organs do in perception, in other words, a speech is the means of verbal knowledge, and considering the distinct nature of this means we must admit verbal testimony to be a distinct means of valid knowledge.

Is verbal testimony included in inference?

The Vaiśeṣikas maintain that verbal testimony is not a distinct means of valid knowledge but is included in inference. In deriving knowledge from a speech we first hear the words constituting the speech and then recollect the things signified by the words. The knowledge of the mutual connection of things thus recollected. which is designated as verbal knowledge, is, according to the Vaiśeṣikas, derived from inference. Suppose one utters a speech thus: "he beat the cow with a stick." On hearing this speech the listener may, say the Vaiśeṣikas, infer as follows:—

1. The words constituting this speech must have been preceded by knowledge of the mutual connection of things as intended by the speaker and reminded by his words—proposition.
2. Because they are possessed of expectancy, etc., and convey the intention of the speaker—reason.
3. The words of all speeches possessing expectancy, etc., and conveying the intention of a speaker are preceded by the knowledge of the mutual connection of things as intended by the speaker and reminded by his words just as the words of a speech, *viz.* "bring a pot" uttered by me (the listener)—example.

If we can thus derive knowledge of the speech by means of inference, there is, according to the Vaiśeṣikas, no necessity for admitting a separate means of knowledge called verbal testimony.

Verbal knowledge is not included in inference.

Gaṅgeśa opposes the above view as follows :—The inference as shown above is not valid inasmuch as it does not involve knowledge (recollection) of actual things as in the case of verbal testimony but the knowledge of things reminded, that is, knowledge of knowledge (recollection) of the things. This is not only cumbersome but also fallacious. Our activity in respect of a thing arises from our knowledge of the thing itself but not from our knowledge of knowledge of the thing which, as in the case of knowledge of error, may not contain in itself the cause of activity. Moreover verbal knowledge is not, like inferential knowledge, dependent on the knowledge of invariable concomitance between the words of a speech and knowledge of the mutual connection of things signified by them, but it results immediately from the words as soon as expectancy, consistency, etc., existing among them have been known. Again, after verbal knowledge has been produced there arises self-consciousness of the form "I know from the speech" but not of the form "I know through inference."

It has already been observed that a speech cannot produce verbal knowledge unless the words composing it possess expectancy, consistency, contiguity and potentiality and convey intention.

आकाङ्क्षावादः ।

Expectancy.

A word is said to bear the relation of expectancy (ākāṅkṣā) to another word if it cannot without the latter produce knowledge of its interconnection in a speech. For instance, 'Devadattaḥ grāmaṁ gacchati' (Devadatta goes to the village) is a speech in which the word 'Devadatta' (in the nominative case) is expectant for the word 'gacchati' ('goes' the verb), and this latter in its turn is expectant for 'grāmaṁ' ('village' in the objective case). In the same way the crude word 'Devadatta' is expectant for 'ḥ' (the same as *su* the first case-ending), the crude word 'grāma' for 'am' (the second case-ending) and 'gam' (the root) for 'ti' (the verbal suffix). A crude word (nāma) and a case-ending (vibhakti), a root (dhātu) and a verbal suffix (ākhyāta), and a verb (kriyā) and a case (kāraka) are expectant for each other.

योग्यता ।

Consistency.

Consistency (yogyatā) consists in a word not bearing a meaning which is incompatible with the meanings of other words in a speech. For instance, no verbal knowledge is derived from such a speech as 'agninā siñca' (sprinkle with fire) because it is incompatible with fire being an instrument in the act of sprinkling. Consistency may be certain or doubtful but in either case there will be verbal knowledge.

आसत्तिः ।

Contiguity.

Contiguity (āsatti) consists in the enunciation of words, which are connected with each other, without a long pause between them, *e.g.* the speech, *viz.* " bring water " will convey no meaning if one utters the word " bring " now, and the word " water " after an hour.

तात्पर्य्यम् ।

Intention.

Intention (tātparyya). which indicates the wish of a speaker, consists in the utterance of a word to convey knowledge of a special thing. If at the time of eating meal one says " bring saindhava " we are to understand by the word " saindhava " a quantity of salt and not a horse.

शब्दानित्यतावादः ।

The Non-eternity of Sound.

Sounds (śabda) such as *k*, etc., are multifarious inasmuch as we find that a sound uttered by a man is different from the corresponding sound uttered by a parrot. On the ground that sounds are many each of which is produced and destroyed, we must admit them to be non-eternal. In fact such an expression as 'the uproar that arose in the market has now ceased' proves beyond a doubt that sound is liable to destruction.

उच्छन्नप्रच्छन्नवादः ।

Sound Destroyed and not Concealed.

If sounds are destructible, their aggregates the speeches must also be so. The Veda, a collection of speeches, is consequently non-eternal. The Mīmāṁsakas say that though the Veda as a collection of speeches was liable to destruction, as it has come down through succession of teachers, its continuity is uninterrupted. Gaṅgeśa opposes the above view by saying that from allusions occurring in the socio-religious institutes (smṛti) and from usages that have prevailed from olden times we can infer that once there existed certain branches of the Vedas which have since disappeared. Therefore the Veda is non-eternal.

The Veda is defined by Gaṅgeśa as a collection of valid speeches which are not the outcome of knowledge of things signified by words and the things signified by which are not the objects of those kinds of knowledge which are derived from means other than verbal testimony.

विधिवादः ।

Injunction.

The Veda is the foundation of our good customs inasmuch as it is the source of all injunctions. An injunction (vidhi) is a speech which produces in a person such conviction as induces him to perform or desist from performing the act signified by the speech, *e.g.* "Let a person, who wishes to go to heaven, perform a horse-sacrifice" is an injunction. "Let not a man drink wine" is another injunction.

According to Kumārila the conviction, which in an ordinary speech represents the purpose of the speaker and in the case of the Vedic speech (not emanating from any person) the potentiality of the speech itself, consists of an idea of the form: "this speech directs me to perform or to desist from performing the act signified by it."

Prabhākara says that the conviction consists of the belief that merit or demerit that accrues from the act signified by the speech, is capable of being earned by our efforts.

Gaṅgeśa, who is not satisfied with any of the above explanations, maintains that the conviction produced in the person consists of the consciousness (*a*) that the act signified by the speech is capable of being performed by him, (*b*) that the performance of it will fulfil his object of desire, and (*c*) that no serious inconvenience will accompany the performance.

All logicians agree however in holding that the conviction is produced by the potentiality of the hortative particle "liṅ" (corresponding to the English word "let") of the speech itself.

अपूर्व्ववादः ।

Merit and Demerit.

Prabhākara says that the conviction produced by a Vedic speech consists first of the belief that merit or demerit, that accrues from the act signified by the speech, is capable of being acquired by our efforts. This belief is followed by the presumption that the act from which merit or demerit accrues, is such as can be performed by us. Gradually there arise two other beliefs, *viz.* that the act if performed will fulfil our object of desire, and that there is no serious inconvenience involved in the act.

Gaṅgeśa opposes the above view by saying that it is cumbersome to assume that so many kinds of belief are produced from a speech to induce us to perform or desist from performing the act signified by it. Let us for the sake of brevity assume that the conviction produced by a speech consists merely of the belief that the act signified by the speech is such as can be performed by us. This belief in the theory of Gaṅgeśa, includes in it two other beliefs, *viz.* that the act is capable of fulfilling our desire and that there is no serious inconvenience involved in it.

शक्तिवादः ।

Potentiality.

The relation that exists between a word and the thing referred to by it is a special relation [1] called *indication* (in Sanskrit "vṛtti"). It is on account of this special relation that we are, on hearing the word "pot," able to recollect the thing known as a pot. This special relation possessed by a word is generally called its *potentiality* (śakti). Nice distinctions are however often made in this matter. The special relation is described as being of two kinds, *viz.* 1. *signification* (saṁketa) and *implication* (lakṣaṇā). The signification is again subdivided as (1) *permanent* and (2) *occasional.* The permanent signification which a word bears is called specially its *potentiality* (śakti). This potentiality, which is the capacity of a word to refer to (*i.e.* produce recollection of) a particular thing, depends upon the will of God manifesting itself in the form: 'let such and such a thing be understood by such and such a word." For instance the potentiality of the word "pot" consists in its producing recollection of an earthen vessel. The occasional signification is called *technicality* (paribhāṣā) which depends upon the will of man manifesting itself in the form: "such and such a thing is to be understood by such and such a word." A word is said to be technical if it produces recollection of a particular thing as desired by man. For instance "nadī" is a technical word for bases ending in ī or ū. The distinction between the permanent and occasional significations is overlooked by those logicians who mantain that words derive their signification, or rather potentiality, not from the will of God but from the will of man. There is according to them as much potentiality in an ordinary word as in a technical one. The potentiality of a word is ascertained from the following sources:—

---

[1] The relation is not an ordinary one, *e.g.* the word (sound) jar does not produce in us the recollection of ether although the former abides in the latter in the relation of inherence (somavāya).

1. *Grammar* (vyākaraṇa), *e.g.* in the sentence: Caitraḥ pacati (Caitra cooks), the potentiality of the crude word "Caitra," the nominative case-ending "ḥ," the root "pac" and the verbal suffix "ti" is ascertained from grammar.
2. *Comparison* (upamāna), *e.g.* in the sentence: "a bos-gavaeus is like a cow," the potentiality of bos-gavaeus is ascertained through comparison.
3. *Dictionary* (koṣa), *e.g.* the potentiality of the word "blue" to refer to the quality of blueness is ascertained from dictionary.
4. *Reliable assertion*, (āpta-vākya), *e.g.* that the word "pika" signifies a black cuckoo is ascertained from the word of a competent scholar.
5. *Usage* (vyavahāra), *e.g.* on hearing "bring a table," "take away a table," etc., and on seeing the table brought and taken away, one understands the potentiality of the word "table."
6. *Context* (vākya-śeṣa), *e.g.* if in a sentence the meaning of the word "yava" (which may refer to a barley-corn or a panic seed) is not clear we can ascertain its true meaning (as a barley-corn) by a reference to the remaining sentences in which it is spoken of as having ears.
7. *Description* (vivṛti), *e.g.* when we describe a belligerent nation to be a warlike one, we can understand the potentiality of the word "belligerent."
8. *Association* with well known words, *e.g.* the potentiality of the word "pika" to refer to a bird is easily understood when the word is associated with some well-known words as follows: "in this mango-tree the *pika* sings sweetly."

We have found that each word possesses the potentiality of producing recollection of a thing dependent upon the will of God or man Now the question arises as to whether the potentiality refers to the genus of the thing or to the thing as an individual. If we suppose that the potentiality refers to an individual, we shall have to assume, say the Mīmāṁsakas, an infinite number of potentialities corresponding to the individuals to which they refer. If on the other hand we assume that the potentiality refers to a genus, we shall have to assume only one potentiality corresponding to the genus which will also include individuals without which it cannot stand.

Gaṅgeśa opposes the above view by saying that we could not recollect individuals unless the potentiality resided in them. On the supposition of the potentiality referring to an individual it is not, continues he, necessary to assume infinite number of potentialities as one and the same potentiality refers to all the individuals which are comprehended under one genus.

Hence, he concludes that the potentiality really refers to the individuals coming under a genus and possessing a form

Words possessed of potentiality may be specified as follows ·—

1 The *etymological* (yaugika) is a word which is understood by the potentiality of its component parts alone, *e g* the word ‘dātā’ (giver) refers to the agent of giving

2 The *conventional* (rūdha) is a word which is understood by the potentiality of its entirety independently of that of its parts, *e g* the word ‘go’ signifies a cow (and not ‘the agent of going’ which is the meaning of its parts)

3 The *etymologo-conventional* (yoga-rūdha) is a word which is understood by the potentiality of the whole harmoniously with the potentiality of its parts, *e g* the word pankaja’ signifies a water-lily which is born in the mud

4 The *etymological conventional* (yaugika-rūdha) is a word which is understood either by the power of its entirety or by that of its parts, *e g* the word ‘udbhid’ signifies a germ cutting a seed up, or a sacrifice

लक्षणा ।

Implication

By implication (laksanā) a word refers to a thing which is related to another thing which is the signification of the word but which does not signify the intention of the speaker, *e g* the word ‘Ganges’ in the sentence *viz* ‘the cow keeper dwells on the Ganges,’ does not signify the current which is referred to by the potentiality of the word but signifies the bank which bears to the current the relation of proximity Similarly the word ‘crow’ in the sentence, *viz* ‘protect the curd from the crow signifies by implication any thing that injures the curd

समासवादः ।

Compound Words

In Sanskrit the compound word (samāsa) is of six kinds *viz* 1 an *attributive compound* (bahuvrīhi), 2 a *determinative compound* (tatpurusa) including the negative determinative compound (nañ-tatpurusa), 3 a *descriptive compound* (karmadhāraya), 4 a *numeral compound* (dvigu) including the unified numeral compound (samāhāra), 5 an *aggregative compound* (dvandva) comprising the mutually aggregative compound (itaretara), the unified aggregative compound (samāhāra), and the residual aggregative compound (ekaśeṣa) and 6. an *indeclinable compound* (avyayībhāva).

In the attributive compound the first word possesses its fixed potentiality and the second word, which through its potentiality points out a thing, refers also by implication to another thing, *e.g.* Citragum ānaya (lit. bring the brindled-cow-man) signifies 'bring the man having a brindled cow.' The first word citra (brindled) refers through its potentiality to the quality of "brindledness" while the second word 'go' (cow) besides pointing out, through its potentiality, the thing called cow refers also by implication to its owner.

Grammarians maintain that when two words are combined together to form an attributive compound, the combination possesses the potentiality of referring to a thing which is connected with but lies beyond the things signified by its component words, *e.g.* Citra-gu (brindled-cow) refers to "ownership" over and above the quality of being "brindled" and the "cow." Gaṅgeśa holds that in an attributive compound all potentialities lie in the words which are combined together to form the compound, and there is no potentiality in the combination itself.

In the determinative compound the second word possesses its fixed potentiality while in the first word there are both potentiality and implication, *e.g.* rāja-puruṣaḥ (a king-officer, that is, an officer of the king) signifies an officer belonging to the king in which the word "rāja" refers to a "king" as well as to "connection with him."

In the descriptive compound in which the component words stand to each other in the relation of identity, there is no special rule for the possession of potentialities by them, *e.g.* nīlotpalam (blue-lotus). The same is the case with the numeral compound, *e.g.* pañca-gavam (five cows).

In the aggregative compound there is no special rule for the assumption of potentiality or implication by the component words, *e.g.* yama-varuṇau (yama and varuṇa).

In an indeclinable compound there are both potentiality and implication in the last word, *e.g.* upakumbham (near the jar).

आख्यातवादः ।

Verbal Suffixes.

A verbal suffix (ākhyāta such as ti, tas or anti) used after a root, refers to the effort favourable to what is signified by the root, *e.g.* Caitraḥ pacati (Caitra cooks) signifies that Caitra is possessed of efforts favourable to cooking. If the agent is an inanimate thing the verbal suffix refers by implication to the operation favourable to what is signified by the root, *e.g.* Ratho gacchati (a chariot moves) signifies that the chariot is possessed of the operation favourable to moving.

धातुवादः ।

The Roots.

The root (dhātu) of a verb refers to the operation favourable to the effect of what is signified by the verb, e.g. the root 'gam' (going) in the sentence, *viz.* sa grāmaṁ gacchati (he goes to the village) refers to moving which is favourable to his connection with the village which is the effect of his going. In the case of an intransitive verb the root refers merely to the operation, *e.g.* sa tiṣṭhati (he stays) in which 'sthā' signifies merely 'staying.'

उपसर्गवादः ।

Prefixes.

The prefix (upasarga) by itself does not bear any meaning but points out the speciality of meaning borne by the root that follows, *e.g.* 'vi' in 'vijayate' (completely conquers) signifies a completeness of conquest.

प्रमाणचतुष्टयप्रामाण्यवादः ।

Validity of the Four Means of Knowledge.

Some say that a gesture (ceṣṭā) is a means of valid knowledge. But this is absurd inasmuch as a gesture merely reminds us of words which produce knowledge. That a deaf person is sometimes prompted to activity by a gesture must be due to the fact that he infers the desire of the man who makes the gesture So a gesture is included in either verbal testimony or inference. Similarly tradition (aitihya) and rumour (janaśruti) are not distinct from verbal testimony while presumption (arthāpatti) and non-perception (anupalabdhi) are comprised in inference.

8. Notes on the Anatomy of a Double Monstrosity in the Chick.

By D. R. Bhattacharya, M.Sc., *Professor, Muir Central College, Allahabad.*

(Read at the Indian Science Congress. Jan. 1917.)

[With Plates III—IV.]

External Features.—The specimen consists of two individuals, intimately connected together along their ventral side. The most peculiar point is that there is only one head, and consequently only one mouth, and only a pair of sensory organs common to both the individuals. Externally there is only one neck, but on removing the skin and connective tissue, two separate necks become distinctly visible. A distinct anus and uropygium to each individual is present. The two necks at their bases are twisted in such a manner, that in comparison with the animal as a whole, the two individuals acquire a lateral position.

Endoskeleton.—The skull is, mostly, in a cartilaginous stage. The exoccipital bones have not yet been formed, nor is there any indication of an occipital condyle. The bony elements of the vertebral column, the limbs and limb girdles, however, are fairly well developed. Some interesting peculiarities exist in connection with the ribs and the sternum. Instead of the ribs of both sides of each individual becoming joined together to a common sternum, as in the normal chick, the ribs of the adjacent sides of the two individuals become joined together to a sternum of that side. There are, thus, two distinct sterni, lying not ventrally, but laterally to the individuals. In the space between the two sterni (fig 7) lies the major portion of the viscera. The sternum itself is in a cartilaginous condition and the keel is very feebly developed. The clavicles, ribs, and uncinate processes are fairly well developed (fig. 3).

Body-cavity.—The body-cavities of both the individuals have become fused together to form one single large body-cavity. The entire body-cavity of the animal, for the sake of convenience of expression, may be theoretically divided into three regions. The central body-cavity in which lie the heart, lungs, and the major portion of the digestive organs, bounded dorsally and ventrally by the two sterni; and two lateral cavities, viz. the abdominal cavities of the two individuals, in which lie a portion of the ileum, rectum, renal organs, and probably also the reproductive organs. It must be understood, however, that all these cavities are continuous with one another and in reality are portions of a big thoracico-abdominal cavity.

Digestive Organs.—The greater part of the digestive organs lies in the central body-cavity. The single gullet, crop and stomach are common to both the individuals. The duodenum arises from the gizzard close to the entrance of the proventriculus, and encloses, as usual, a single pancreas in its fold. It then passes off into the ileum, which at first presents a very much coiled appearance. At about the middle of its entire length, the ileum divides into two. This is the first indication of the division of the intestine. From this point, one branch after a slightly coiled course enters the right lateral cavity, *i.e.* the abdominal cavity of the right individual. The other comparatively longer branch traverses the central body-cavity, passing dorsally to the stomach, takes a slightly spiral course, and then enters the left lateral cavity, or the abdominal cavity of the left individual (fig. 4). The ileum in the right individual passes into a dilated rectum and the junction between the two is marked by a pair of elongated coeca. The ileum in the left individual passes with very little change of diameter into the rectum. I have not been able to find out the coeca in this individual. In the cloaca, in both the individuals, the usual three compartments are present and the *bursa Fabricii* lies dorsal to it. In the central cavity lies the liver divided into the right and left lobes. A fairly big gall bladder and a small spleen are present. A pair of thyroids at the base of the neck and an elongated thymus on each side of the neck of the animal are distinctly visible. The yolk mass occupies nearly two-thirds of the space in the central body-cavity.

Respiratory Organs.—The glottis leads into the larynx, as usual. The trachea is situated ventral to the gullet and between the necks of the two individuals. It continues down to the thorax. Here it enters the central body-cavity, and divides into the two bronchi, each of which passes to the lung of its own side. The lungs occupy the dorsal region of the central body-cavity, close beneath the sternum and the adjacent ribs attached to it. We see, thus, there is only one pair of lungs common to both the individuals.

The Heart and Blood-vessels.—The heart consists of the usual chambers, with this difference, that there is a well developed sinus venosus present (fig. 6). Both the individuals are well supplied with arterial and venous blood. The main aortic arch, arising from the left ventricle, divides into the right and left aortic arches. The right aortic arch supplies the right individual, and the left aortic arch the left individual, with arterial blood. By following the course of one arch, say, the right one, it is found that the arch gives rise to a single innominate artery. This artery gives rise to a single carotid running along the inner side of the neck of the right individual. The carotid gives rise to the vertebral artery. Lower down, the innominate gives rise to a subclavian, supplying the right fore-limb of the right individual. The aorta itself gives off a subclavian which supplies the left fore-limb of the right individual. The left aortic arch has a similar arrangement as the right, with regard to its blood supply to the left individual. The pulmonary artery arises from the right ventricle and divides into two, each branch going to the lung of its own side. The left auricle receives the pulmonary veins and the right auricle the two pre-caval veins. By following the course of the right pre-caval, it is found that it receives blood from a single jugular vein, lying along the outer side of the neck of the right individual. It also receives two subclavian veins, each coming from the fore-limb of its side. The sinus venosus lying dorsal to the ventricle is a big chamber, which receives a vitelline vein and two post-caval veins, one from each individual. The post-caval vein thus still retains its connection with the sinus venosus, which opens into the right auricle.

Nervous System.—On a superficial examination, it was found that the medulla oblongata, by division gives rise to the two spinal cords, which run through the neural canal of the vertebral column of each individual. Unfortunately, the brain was not well preserved; so, it is difficult to say more with any degree of certainty.

In conclusion, I may add that the animal is peculiar in the possession and relationship of its various organs. Externally, except for the head and neck, the animal seems to be divided into two individuals. But this external division has no correspondence with the division of the internal organs Instead of the animals possessing separate thoracic cavities, there is single fused body-cavity common to both the individuals. The organs which ordinarily lie in the thoracic and anterior abdominal cavities are also common to both—*e.g.* the heart, lungs, the greater portion of the digestive canal from the gullet down to the ileum, the bronchi, liver, pancreas, spleen, etc. The single heart performs the function of a double heart, and supplies both the individuals with arterial and venous blood. The sternum is very peculiarly situated and is contributed to in its formation by both the individuals; so that neither of them can claim it to be exclusively its own. Each individual, however, possesses a pair of kidneys. a rectum, cloaca, and *bursa Fabricii*. The fore and hind limbs have a blood and nerve supply as in the normal chick. It has already been said that they possess separate and distinct vertebral columns, limbs, and limb girdles

My sincere thanks are due to Messrs. A. H. Niblett and G. Blanchette of the Anglo-Indian Hostel, Allahabad, for kindly presenting the specimen to me. It was born in March 1916. and was preserved in weak methylated spirit for about six months. The chicken lived for a few minutes after it was hatched. Later on, in November 1916, a specimen showing a similar external abnormality was very kindly lent to me for examination by the authorities of the Indian Museum. Unfortunately, it was so badly preserved that it has not been of much use to me in my inquiry. I have to offer my sincere thanks to Dr. Annandale for so kindly lending me the Indian Museum specimen, and also to Dr. Woodland for occasional advice and guidance.

EXPLANATION OF PLATES III—IV.

An Abnormal Chick.

FIG. 1.—A and B. Two different views of the animal with the feathers and skin intact.

FIG. 2.—A and B. Two different views of the same, with the feathers removed.

FIG. 3.—Ventral view of the sternum, ribs, and a portion of the vertebral column of both the individuals.

a = keel or carina sterni; *b* = sternum; *c* = furcula; *d* = coracoid; *e* = costal process; *f* = sternal rib; *g* = vertebral rib; *h* = uncinate process; *i* = internal xiphoid process; *j* = external xiphoid process; *k* = vertebral column of the right individual; *k′* = vertebral column of the left individual; *l* and *l′* = vertebral ribs of the right and left individuals, lying on the dorsal side of the body of the animal, and shown by dotted lines.

FIG. 4.—The digestive canal, with the stomach cut open and portions of the ileum removed, seen from the ventral side.

a = gullet; *b* = crop; *c* = proventriculus; *d* = cavity of the gizzard; *e* = duodenum; *f* = anterior region of ileum; *g* = middle region of ileum, and the point of bifurcation into the right and left portion of ileum; *h* = the ileum of the left individual; *h′* = the ileum of the right individual: *i* = rectum of the left individual; *j* = rectum of the right individual: *k* and *k′* = openings of the rectum of both the individuals into cloaca.

FIG. 5.—The heart and chief blood vessels, ventral aspect.

a = ventricle; *b* = left auricle; *c* = right auricle; *d* = left pulmonary artery; *e* = main aortic arch; *e′* = left aortic arch; *e″* = right aortic arch; *f* = left pre-caval vein; *f′* = right pre-caval vein; *g* = left jugular vein; *g′* = right jugular vein; *h* = left dorsal aorta; *h′* = left vertebral artery; *i* = subclavian arteries of the left individual; *i′* = right innominate artery; *i″* = left innominate artery; *j* = left carotid artery; *j′* = right carotid artery; *k* = subclavian arteries of the right individual; *k′* = right vertebral artery; *l* = sinus venosus; *m* = vitelline vein; *n* = left vitelline artery; *n′* = right vitelline artery; *p* = right dorsal aorta; *y* = yolk mass, shown much smaller than what it is.

FIG. 6.—The ventricle displaced forwards to show the sinus venosus, ventral aspect.

a = left ventricle; *b* = right ventricle; *c* = left auricle; *d* = right auricle; *e* = left pre-caval vein; *f* = right pre-caval vein; *g* = sinus venosus; *h* = vitelline vein; *i* = left post-caval vein; *k* = right post-caval vein.

FIG. 7.—Diagrammatic transverse section through the body of the monster, to show the position of the two sterni, ribs, and vertebral column of both the individuals.

a = sternum (situated dorsally); *a′* = sternum (situated ventrally); *b* = vertebral column of the left individual; *b′* = vertebral column of the right individual; *c* = sternal rib: *d* = vertebral rib.

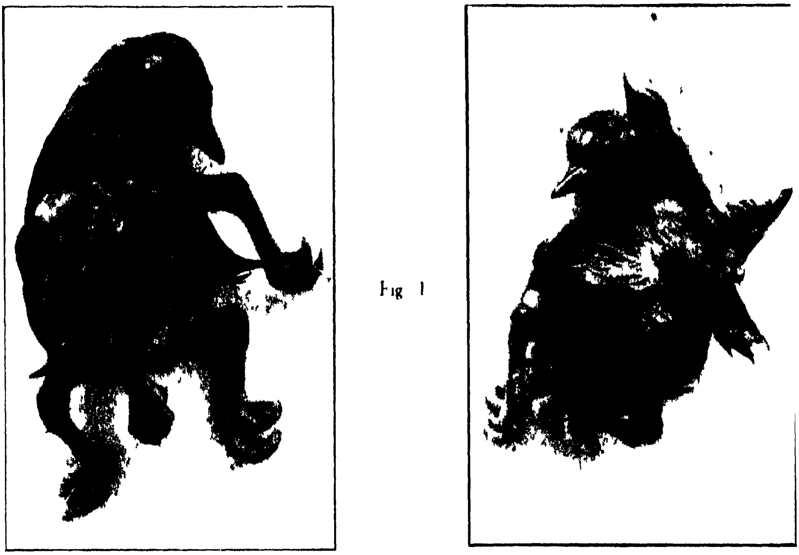


Fig 1

A

B

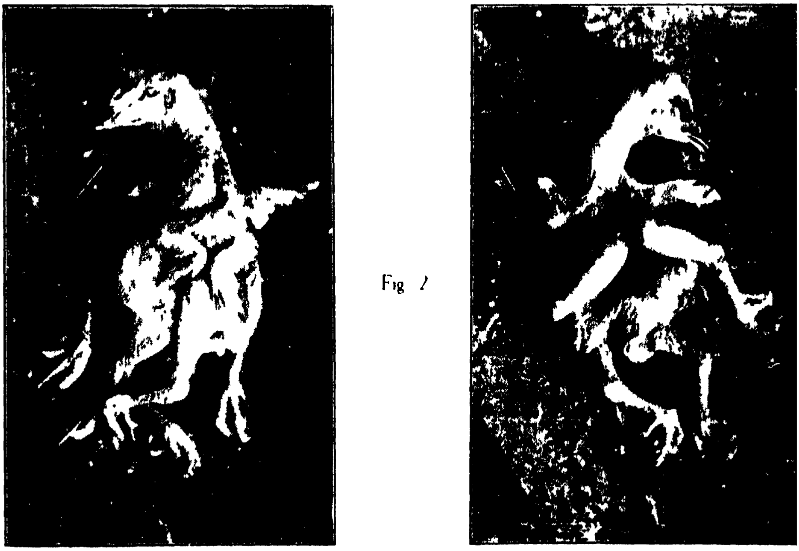
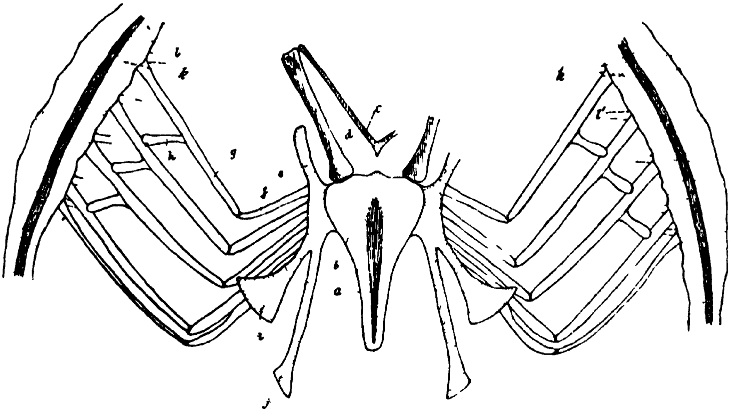


Fig 2

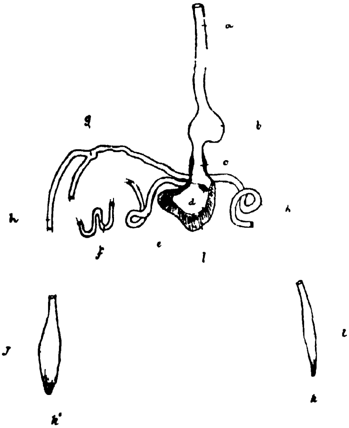
A

B

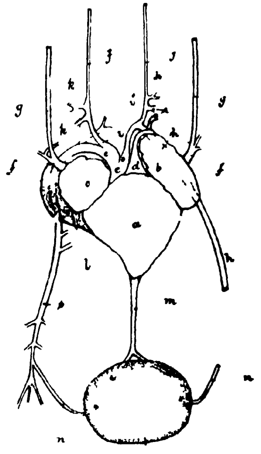
DOUBLE MONSTROSITY IN THE CHICK



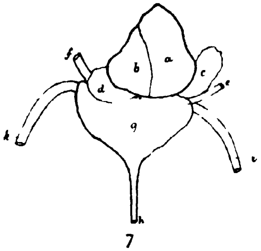
3



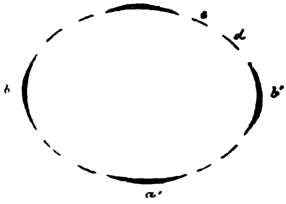
4



5



7



6

DOUBLE MONSTROSITY IN THE CHICK

9. NUMISMATIC SUPPLEMENT No. XXXI.

***Note.*—The numeration of the articles below is continued from p. 267 of the "Journal and Proceedings" for 1918.**

194. THE MANDŪ GOLD COUPLET.

I crave permission to say a few words in reference to the meaning of the metrical legend inscribed on the gold Muhr issued from the Mandū Mint in the twelfth year of the reign of Jahāngīr. The Muhr was first published by Mr. Rodgers in the paper on the "Couplets or *Baits* on the Coins of Shāh Nūruddīn Jahāngīr," which appeared in the Journal of the Asiatic Society of Bengal in 1888. That admirable builder-up of such verses arranged the words thus :—

سکهٔ مندو ز نام جهانگیـــر شاه
پرتو دهد بنور جهانی چو مهر و ماه

and translated them as under :—

"May the Coin of Mandū, through the name of Jahāngīr, give light to the world like the sun and the moon" (*loc. cit.* 23). Mr. Rodgers was not sure that he had been able to hit upon the true order of the words, and he has said so. Mr. Whitehead has taken a line of his own. He has reversed the order of the lines and thinks they would read better thus :—

بنور جهانی دهد پرتو چو مهر و ماه
سکهٔ مندو ز نامِ جهانگیـــر شاه

(P.M.C. No. 918.)

His rendering also differs considerably from his predecessor's, and is as follows :—

"With light of the world gave (*sic*) rays like the sun and moon,
Coin of Mandū by the name of Jahāngīr Shāh."

It must be obvious to every one having even a moderate acquaintance with Persian that Rodgers' version is easily intelligible but that it possesses that merit only on account of the translator having slurred over the difficulty of the phrase نور جهانی. It must be said that Mr. Whitehead has adhered much more faithfully to his text, but I am afraid that that fidelity has been purchased somewhat dearly at the expense of sense and meaning

I must confess my own incapacity to understand how any coin "can give rays *with* light of the world." At the same time, I must say that repeated attempts to construe the verse differently ended only in bringing home to my mind the conviction, that so long as نور جهانی was taken in the usual sense, it was impossible to make the lines yield anything like a rational statement.

It may be therefore permissible to propose, for the consideration of those who take any interest in these somewhat indifferent specimens of Persian versification, a new interpretation of the distich which has recently occurred to me. It is based on the following passage from the *Tūzuk-i-Jahāngīrī* which I quote from the excellent version made by Mr. Alexander Rogers and revised and edited by Mr. Beveridge.

Speaking of the mandates on various subjects, which he took care to issue soon after his accession, the Imperial autobiographer informs us:—

"At a propitious hour, I ordered that they should coin gold and silver of different weights. To each coin, I gave a separate name, *viz.* to the Muhr of 100 tolā that of *Nūr-shāhī*; to that of 50 tolā that of *Nūr-sulṭanī*; to that of 20 tolā *Nūr-daulat*; to that of 10 tolā *Nūr-karam*, to that of 5 tolā *Nūr-Mihr* and to that of 1 tolā *Nūr-jahānī*. The half of this I called *Nurānī* and the quarter, *Rawājī*." *Op. cit.* pp. 10-11.

It seems to me that the word *Nūr-jahānī* is used in the couplet in this peculiar sense, and must be understood as such. I would therefore translate the 'Bait' thus:—

"The stamp on the coin of Mandū gives through the name of Jahāngīr Shāh lustre like the Sun and Moon to the *Nūr-jahānī* (*i e.* the one-tolā gold muhr").

If this interpretation is correct, the Mandū gold-piece must command additional interest on account of being one of that small number of Mughal issues which bear on their faces the official or popular designation borne by them. The rarity of any coins bearing the word روپیه or دام or دمری or مهر or نور افشان or نثار is well known, and the fact that the 'poet' has contrived to embody in the 'Bait,' itself the *denominational* epithet by which the Muhr of this particular weight was officially known, is deserving of notice.

It may not be perhaps superfluous to add that this name "Nūr-jahānī," given to the one-tolā Muhr in *the first year of* Jahāngīr's reign, can have had nothing whatever to do with the title afterwards borne by the all-powerful inmate of the Imperial harem. That beautiful lady was at the time still the wife of Sher Afgān. She was married to the Emperor only in the 6th regnal year, and it was not till the eleventh that, from being merely the 'Light of the Harem' (Nūr-Maḥal), she was exalted to the dignity of 'Light of the World.' (*Tūzuk*, I. 319.) Indeed, all these fanciful epithets appear to have been intended as compliments to the Emperor himself, and to have had reference to the *laqab* of *Nūru-d-dīn* which he had adopted on his accession.

It may be likewise noted that 100, 50 and 20 Muhr-pieces had been issued by Akbar also, but the names given to them by that monarch were all of Hindi or Sanscrit origin, *e.g.* S'hansah, Rahas. and Binsat. (Blochmann, *Ain.* I, pp. 27-29.) Ten-muhr and Five-muhr pieces also are mentioned by Abūl Faẓl, but their names are, for some reason, omitted. Jahāngīr appears to have lost no time in consigning to oblivion the neologisms of his father and introducing his own. Like some other Oriental princes, he seems to have been fatuously solicitous to 'make a name" by paltry or fanciful changes in style, nomenclature, and other matters of no importance.

Junāgadh, S. H. HODIVĀLĀ.
15th October, 1916.

195. THE KATAK RUPEES OF AḤMAD SHĀH.

One of the hitherto unsolved puzzles of Mug͟hal Numismatics is connected with some rupees which were struck at Katak in the name of the Emperor Aḥmad Shāh. So many as seventeen specimens are registered in the Indian Museum Catalogue, and the Collection in the capital of the Panjāb possesses seven. This "strange series of coins" is distinguished by certain 'figures or symbols over the word سنة on the reverse" of which Mr. Nelson Wright candidly declares that he is "unable to say to what they refer." (I.M.C., p. lviii.) As for Mr. Whitehead, he contents himself with reiterating Mr. Wright's suggestion that they "are of Marāthā origin, and were struck during the period in which Orissā was a Marāthā province" (P.M.C.. p. xcv). It is common knowledge that during the years 1742-1751 A.C.. Bengal, Bihār and Orissā were so incessantly invaded and plundered by the hordes of Rāghūji Bhonslay and the Ṣubahdār 'Alīvardī K͟hān reduced to such straits, that he ceded to them Orissā in consideration of their sparing the rest of his territories (1165 A.H., 1751 A.C.). It is true that for some time afterwards, the ostensible governor continued to be a nominee of the Muḥammadan Viceroy: but even that semblance of Musalmān authority was done away with, and the province became and remained an integral part of the dominions of the Bhonslay Rājās of Nāgpūr until 1803 A.C. (1218 A.H.). I venture to suggest that the problem of these figures, symbols or Persian numerals is by no means so formidable as it appears. and that the cryptic numbers on all the extant specimens, with a very few exceptions to which I shall presently advert, admit of a simple explanation. Of the seventeen specimens in the Indian Museum, four contain only a mark like the figure ٠ and one or both of M.m. 73-74. (I.M.C.). The remaining thirteen have the following Persian numerals inscribed over the word سنه on the reverse :—

۲۱۱ (No. 2118), ۳۱۲ (No. 2119), ۷ (No. 2124).
۱۲ (No. 2125-6) ۲۱ (No. 2127), ۶۸ (No. 2128),
۶۹ (No. 2129), ۷۴ (No. 2130), ۸۸ (No. 2131),
۹۶ (No. 2132), ۱۱۹ (No. 2133), ۱۲ (No. 2134).

Of the seven coins catalogued by Mr. Whitehead, three (Nos. 2703-5) have no figures but only a M. exactly like that on the corresponding issues in the Indian Museum, while four have a ۲ ۷. ۱۲ and ۲۱. (Nos. 2699-2702.)

My submission is that these apparently incomprehensible and unmeaning numerals stand for those years of the Hijra in which the coins were struck, and that by ۲۱۱. ۷, ۱۲ ۶۸, ۶۹ ۷۴, ۸۸, ۹۶ ۱۱۹ and ۱۲, we are to understand (1)211, (120)7, (12)12, (11)68, (11)69, (11)74, (11)88, (11)96, 119X, and (12)12 of the Era of the Flight. Similarly, the symbols on P.M.C. 2699-2701 are meant for (120)2, (120)7 and (12)12 A.H. The only issues which do not at once lend themselves to this simple solution are I.M.C. Nos. 2119 and 2127, and P.M.C. No. 2702, the first of which has the figure ۳۱۲, and the last two a ۲۱. Now (1)312 A.H. is absolutely unthinkable under the circumstances, and (12)21 A.H. is also inadmissible as the Marāthā domination terminated in 1803 A.C. or 1218 A.H. I make bold to suggest that the difficulty is only apparent, and that in these cases the numbers were, either deliberately or by mistake, impressed from right to left, instead of as usual, from left to right. We know that the inversion of the customary way of inscribing Persian numerals was one of the numerous innovations of Tippū Sulṭān, and it is *just* possible that the same notion may have struck the fancy of some half-educated Marāthā Governor or Mint-master. It seems to me much more probable, however, that these three issues are merely misstamps, which owe their existence to the carelessness or ignorance of the artificers employed. The Marāthās rarely displayed any extraordinary solicitude in regard either to the intrinsic value or to the artistic or even correct execution of their numerous mintages. The revenue from the Mint was, as a rule, farmed out to the local goldsmiths and bankers, (Rānāde, *Currencies and Mints under Marāthā Rule*, B.B.R.A.S. Journal, 1899, pp. 195-198), and it was obviously the interest of the latter to "do it on the cheap," irrespective of any considerations as to the purity of the metal, the beauty of the design or the competence of the workman.

This explanation of the figures on these puzzling issues of the Katak mint receives from one of their own number a support which one could have scarcely looked for. This is I.M.C. No 2131, which has inscribed *over* the سنه on the reverse, the number ٨٨, but the figure 11 appears at the same time *under* the word. It is perhaps permissible to say that this all but demonstrates the correctness of the above theory which turns merely on the conjectural 'filling up' of the hundreds figures as, *in this particular instance*, has luckily been done on the coin itself. Any lingering doubt on that head must be also removed by an inspection of No. 2133, on which the thousand, hundred and tens are plainly legible (١١٩x), the unit figure only being deficient.

I have said that these rupees were struck by the Bhonslay Rājās of Nāgpūr. This is borne out by the ornament or Mint-mark (No. 73, I.M.C., No. 69, P.M.C.) which appears on several of them over the و or the س of جلوس. (Nos. 2120-22, I.M.C.; Nos. 2703 5, P.M.C.) This ornament is the *Jarī patkā* or 'banner of cloth of gold' which was always carried before the Bhonslay rulers of Nāgpūr in honour of their being hereditary *Senā Ṣāhib Ṣubehs* of the Marāthā state, and which appears to have been sent as a mark of official recognition to every occupant of the throne of Nāgpūr immediately after his accession. This "Juree Putka," says Grant Duff, "was first used by Suntajee Ghorepuray, having been confided to his charge by Rājā Ram." (*History of the Marathas*, Bombay Reprint, 1873, p. 697.) In another place, the same authority informs us that Suntajee, "now the oldest representative of the Kapsee family, besides the rank of Senaputtee, was further dignified with some additions to his hereditary titles, and styled *Hindoo Rao Mumlukut Mudar*. He was also intrusted with *a new standard*, called *the Juree Putka or golden pennon*; and in imitation of the imperial officers of the highest rank, he was authorized to beat the *nobut* or large drum, and assume various other insignia." (*Ibid.*, p. 164.)

To this office of Senā Ṣahib Ṣubeh, Raghūjī Bhonslay of Berār was appointed in 1734 A.C. on the disgrace and imprisonment of his cousin, Kānhoji (*ibid*, p. 229) and the dignity carried with it the proud privilege of having the *Jarī Patkā* carried before the holder. (*Ib.*, p. 230.) This stands out clearly from another passage also in which we are told that when on the death of Janoji Bhonslay in 1773 A.C. there was a contest for the regency between his brothers 'Moodajee' and 'Sabajee,' the former's party was much "discouraged by the defection of a considerable number of the choice troops *who carried with them the Juree Putka of the Sena Sahib Subeh*." Mudājī Bhonslay, however, "attacked his brother" and defeated him in spite of that "evil presage." (*Ibid.*, p. 360.) Lastly, we learn from the same source that on the eve of the outbreak of those hostilities which terminated in the deposition of Āppā Ṣāhib, the Rājā of Nāgpūr, "he sent to inform Mr. Jenkins that a Khillut had arrived for him from the Peishwa, *who had also sent him the Juree Putka* and conferred on him the title of Senaputtee, that he intended to go in state to his camp to receive those honours next day, and invited the resident to be present at the ceremony."—p. 662 (1817 A.C.). See also H. H. Wilson's *Continuation of Mill's History of India*, Ed 1858, VIII, 186.

Prinsep appears to have been aware that this image of a banner or pennon was the badge of the Rājās of Nāgpūr, for he says in explanation of No. 88 of the Plate (III) illustrating the symbols on Indian coins: "Patāk, flag or standard of Siva: Sagur rupee (pl. 11). Nagpoor." (*Useful Tables*, ed. 1834. p. 56.) The shape of the ornament on the Sāgar coins (P.M.C. 3010-1) is somewhat different, but there can be little doubt that it also is a 'flag,' as indeed Mr Whitehead declares it to be. Sāgar (or Saugor) was at this time held by the descendants of Govind Rāo Pandit to whom it had been given by the Peshwā after the latter's death during the disastrous campaign of Pānīpat. (*Imp. Gaz.* XXII 138; Mill and Wilson, VIII, 247; Grant Duff, *op. cit.* 315.) The object of having banners of two different shapes was probably to make it easy to distinguish between two similar types of rupees circulating in the same province.

S. H HODIVĀLĀ.

196. NOTES AND SUGGESTIONS ABOUT SOME UNASSIGNED OR DOUBTFUL MUG͟HAL MINTS.

(*i*) AJĀYŪR (?) [RĀJĀPŪR].

In his valuable monograph on the "Mint-towns of the Mug͟hal Emperors," Mr. Whitehead has declined to make room for the 'Doubtful Mints' of Ajāyūr, Khārpūr, Sirsā and Gangpūr, on the ground that they have been "attempts to interpret difficulties, but are too uncertain to merit permanent record" (p. 429). Mr. Whitehead's hesitation is certainly commendable, but I trust I may not be denied absolution for making another effort to deliver the first of this quartette of Mint-names from the numismatic purgatory.

It goes without saying that no town of the name of Ajāyūr is now known, and Mr. Lane Poole's endeavour to identify it with Ajāyapūr, the old name of Bakror—itself a place of no note—is admittedly the conduct of a "forlorn hope." Fortunately, the coin itself has been figured on Plate XXV of the B.M.C., and we are not, as in some other instances, left without the means of judging for ourselves. It is also a matter for congratulation that such of the letters as appear on the disc are by no means wanting in definition or clearness. Indeed, there can be no question whatever as to the two 'Alifs,' the 'Jim,' the 'Wāv' or the 'Ré.' We are left in doubt only about the initial letter, and the antecedent of the 'Wāv.' I beg to offer the suggestion that the first letter of the name has been cut off on account of the die having been larger than the *flan*, and that the antecedent of the 'Wāv' has for the same reason lost its third inferior dot. In other words, I submit that the name is probably Rājāpūr Now there are at least seven places of that name in the Post Office Guide, but the only two of any note are those mentioned in the Imperial Gazetteer, *viz.* a town in the Mau Tahsil of Bāndā District, United Provinces, which is said to have been the birth place of, or been founded by the famous poet Tulsīdās But I cannot find any reference to it in any historical work, and it does not appear to have possessed any political importance. The other Rājāpūr is "the headquarters of the Tāluqā of the same name in Ratnāgirī District, Bombay, and situated in 16° 34′ N. and 73° 31′ E. at the head of a tidal creek 30 miles south-by-east of Ratnāgirī town and about 15 miles from the sea..... Rājāpur is the oldest-looking and best-preserved town in the Konkan...... The old English factory......gives the town a special interest ...... At the time of the first Muhammadan conquest (1312). Rājāpūr was the chief town of the district. In 1660-1 and again in 1670, Shivāji plundered the town, sacking the English factory. In 1713, Rājāpūr was handed over to Āngriā In 1756, it was taken by the Peshwā from Āngriā, and in 1818 it came into British possession along with the rest of the Peshwa's dominions" (*Imp. Gaz.* XXI, 66–7).

We know, thanks to Dr. Taylor, that Aurangzeb had a mint in this town which he renamed Islāmbandar (J.A.S B 1912, p. 434). It would appear that this new-fangled designation was, like several others, consigned to oblivion after Aurangzeb's death, though the mint continued to be maintained for meeting the demand for currency in a busy port down to 1148 A.H., the eighteenth year of the reign of Muḥammad Shāh to which the coin belongs [1]

The College, Junāgadh. S. H. HODIVĀLĀ
5th March, 1917.

P.S.—I understand that Mr. F. D. J. Paruck of Bombay has arrived at the same conclusion as to the reading of this mint-name. Rājāpūr is twice mentioned by Manucci (Irvine, Storia do Mogor. II, 263, 279), and on both occasions the *French traders* residing there are expressly referred to. Mr. Irvine has identified the place with Dhunda [Dandā] Rājāpūr (Lat. 18°

---

[1] Tavernier says: "The King of Bijāpur has three good ports in his kingdom; these are Rajapur, Dabhol, and Kareputtun." (*Travels*, ed. Ball. I, 181-2).

18′, Long. 73° 3′) close to Jinjira (*Op. cit.*, II, 263 note). I venture to think that this identification is untenable. The name of the place near Jinjira is generally written دندا راجپوري by the historians (K͟hāfi K͟hān, II, 223, 225, 226, 228), and there is no evidence of a French factory having ever existed there. On the other hand, we know that the Rājāpūr in Ratnāgirī district had an English factory in 1660–1 A.C., and that the French established another in the same place in 1670, the founder being Boureau-Deslandes. [Irvine, *Op. cit.*, I, lxxxi, IV, 415.]

S. H. H.

(*ii*) FATḤĀBĀD–DHĀRŪR.

The mint-name فتح آباد دهارور occurs on some rupees of Jahāndār Shāh and Farruk͟hsiyar which were first published in Num. Supp XIII (p. 239) and II (p. 241) respectively by Mr. Nelson Wright. At p. 496 of his mint-list, Mr. Whitehead's transliteration of the name is Fatḥābād-Dhārūr, but in the "Notes on a Few Points of Interest in Connection with the Mint-towns" which are prefixed to that exceedingly useful publication, he informs us that "the full name of Fatḥābād mint is Fatḥābād Dhārūr (Dhārwar)." J.A.S.B. 1912, p. 436.

Mr. Whitehead's object in adding the alternative form in the parenthesis was, perhaps, to make it clear that دهارور can be read *Dhārūr, as well as Dhārwar*, as the letter و is pronounced as a vowel or as a consonant. The phonetic resemblance between this other form and Dhārwār is so close that one is naturally left in doubt as to their not being one and the same. The matter is further complicated by the fact that there are, as a glance at the Index of the *Imperial Gazetteer Atlas* will show, two places of the name of *Dhārūr* in the territories of the Niẓām of Ḥaidarābād. Fortunately, it is possible to resolve all these doubts as to the real situation of our فتح آباد دهارور with the assistance of the Persian histories.

The fort of Dhārūr is frequently mentioned in Ferishta's annals of the Deccan (Briggs, *Rise of the Mahomedan Power in India*, Calcutta Reprint, 1910, Vol. III, pp. 132-3, 253, 331, 332, 427), as well as in the Mug͟hal chronicles. It appears to have been first built by a Bijāpūr general of the name of Kamāl Kishvar K͟hān in 975 A.H. or 1567 A.C. (Briggs, *Op. cit.*, III. 132), and was besieged and taken by A'ẓam K͟hān in the fourth year of the reign of Shāh Jahān, 1040 A.H. (*Bādshāhnāma*, Bibl. Ind. Text, Vol. I, Pt. i, pp. 339-343; Elliot and Dowson, VII, 20) from the Niẓām Shāhis, into whose hands it appears to have fallen very soon after its erection (Briggs, *Op. cit.*, III, 253). It was after its conquest by the Mug͟hals that it got the name of فتح آباد (City of Victory), and this عرف was evidently given to it in memory of that triumph. (*Ma'āṣiru-l-Umarā*, I, 177, l. 5.) It is also certain that Dhārūr was called Fatḥābād in the tenth year of Shāh Jahān, for we read in the contemporary chronicle that Nūr Muḥammad 'Arab was appointed Qil'adār of فتحآباد معروف بدهارور. *i.e.* Fatḥābād, [otherwise] known (معروف) as Dhārūr (*Bādshāhnāma*, I, ii, 278, l. 6) in 1046 A.H. This Fatḥābād Dhārūr is explicitly said to have been in the neighbourhood of Bīr [Bhīr, 18° 59′ N., 75° 46′ E.] and also of Pāthrī [19° 15′ N., 76° 27′ E.] (*Bādshāhnāma*, I, i, 321-2). It was reached by crossing the pass (کتل) of Anjan-dudh, [Ajanta ? | *ibid.*, I i, 339 We are further told that it was in the vicinity of Ambā-Jogāi [18° 41′ N., 76° 24′ E.], *ibid.*, I, i, 329; that the Qaṣbah of ماندور was ten koss distant from it (*ib.*, I, i, 344), and that it was only twelve koss away from the river ونجره, *i.e.* the Manjra (*Ibid.*, I, i, 331; Elliot and Dowson, VII, 16 and note; see also '*Ālamgīrnāma*, Bibl. Ind. Text, 1018). According to the *Maāṣiru-l-Umarā*, Dhārūr, Bīr, Jālnāpūr, Pattan [Mungi-pattan] Juner, Sangamner, Aḥmadnagar and Daulatābād were all included in the Bālāghāt (Bibl. Ind. Text, I. 745). Khān Jahān Bārhā reached Dhārūr from the side of Bīr | از سمت بیر | in the 9th year of Shāh Jahān. (*Ibid.*, I. 762.) Khān Zamān was made Qil'adār of Fatḥābād-Dhārūr in the 23rd year of the same reign on the death of 'Arab Khān (*ib.*, I, 787). The appointments of three other governors of the fort are recorded *along with its double name*, (I, 197, II, 795, III, 116), which occurs in two other places also (II, 710, III, 579).

It is clear that very little of what is predicated in the above passages is applicable to Dhārwār. Its proximity to Bhīr, and Pāthrī, its situation in the vicinity of Ambā-Jogāi and the pass of Anjan-dudh and its short distance from the River Mānjrā, all place Dhārwār absolutely out of court, and establish the identity of the mint-town with the Dhārūr in the Bhīr District. Besides it must be remembered that Fatḥābād Dhārūr is here repeatedly said to have been included in the dominions of Shāh Jahān and the names of at least two Qil'adārs of the Shāh Jahānī period are recorded, whereas Dhārwār did not come into the possession of the Mughals until after the conquest of Bijāpūr by Aurangzeb in 1686 A.C. (*Bombay Gazetteer*. Vol. XXII, 409-410, and 707). It follows that Fatḥābād-Dhārūr of which the situation is described as above in the chronicle of 'Abdul Ḥamīd Lāhorī, which was finished before Aurangzeb's accession to the throne, cannot be Dhārwār at all.

As for the other Dhārūr in the Gulbarga district, a glance at the map of Ḥaidarābād State in the Imperial Gazetteer Atlas will show that it is not in the neighbourhood either of Bhīr, or of Pāthri or of Ambājogāi or the river Mānjrā. We may therefore take it as reasonably certain that the Dhārūr of the coins is the place of that name in Bhīr District, Ḥaidarābād State. (*Imp Gaz. Atlas*, *Plate* 40 *B*2.)

The College, Junāgadh S. H. Hodivālā.
20th October, 1916

(*iii*) Gadnārat (?) [Gadhākot].

The Nāgpūr Museum contains two Rupees of Aḥmad Shāh to which Mr. Nelson Wright first drew attention in Num. Sup XIII. "These coins are Mahratta-struck. They resemble in execution the Katak coins on pp. 248-250 of I.M.C. III, 1908. What their mint is I am not able to conjecture." (*Loc. cit.*, 242.) The year is represented by the number ٥٦ on both, and one of them has an arrow-head to the left of the mint-name, which Mr. Wright thought was گدنارت on the larger coin, and ناگرت on the smaller.

May I beg leave to offer for the consideration of Numismatists a suggestion in reference to these puzzling Marāthā issues? It is that the name is گدهاکوت (or گرهاکوت). The third letter is not a 'nūn' but a 'hā.' The fifth is a ک which has been cut off from the larger coin, but is clearly visible on the smaller. The latter has in its turn lost the first two letters گر or گد.

The place is not at all difficult to identify It is the Garhākota of the *Imperial Gazetteer*, "a town in the Rehli Taḥsil of Saugor District, Central Provinces, situated in 23° 46′ N. and 79° 9′ E., at the junction of the Gadheri and Sonār rivers 28 miles from Saugor on the Dāmoh road." It has an old fort which must formerly have been of great strength, and was held by the rebels, and stormed by Sir Hugh Rose in 1858. "Two miles from the town is an old tower, which formed part of the summer palace of a Bundelā King and is said to have been constructed in order that both Saugor and Dāmoh might be visible from its summit." (XII. 161.) 'Gurrahkota' Rupees are included by Prinsep (Useful Tables, Ed. 1834, p. 44) in his list of silver coins, and he states that they were 'debased Balasahy.'

It may not perhaps be superfluous to add that Garhākota is an altogether different place from Gadhā near Jabalpūr to which the Bālānagar Gadhā coins of Shāh 'Ālam II have been, with good reason, assigned

As for the figures ٥٦ they are probably a mis-stamp for ٦٥ *i.e.* [11] 65 A.H. They can not stand for the "regnal year."

The College, Junāgadh. S. H. Hodivālā
10th March, 1917.

(*iv*) Gangpūr (?) [Ganjīkot].

Among the rarities in the British Museum is a diminutive gold coin (wt. 22 grs.) of the 5th year of Farrukhsiyar, with a mint-name which was read by Mr. Lane Poole as كنكپور (B.M.C. no. 902). The Indian Museum contains a small piece in the same metal (wt. 43 grs.) bearing on the obverse the name علي گوهر, and on the reverse a mint-name read in the same way by Mr. Rodgers (I.M.C. No. 10908, p. 76). Mr. Nelson Wright has pronounced the opinion that this reading "cannot be supported," and suggested that it is probably كنجنكوت, without saying where Kanjankot is to be found. (I.M.C., 1908, III, No. 2281a, p. 270 Note.)

May I be permitted to state that the true reading is گنجیکوت Ganjikot, the name by which the famous fortress of Gandikot in the Kaḍāpah district of the Madras Presidency is repeatedly mentioned by several writers of the seventeenth and eighteenth centuries? It will be seen that I take the fourth letter of the name to be an ی and not a ن, and the first to be the *Kāf-i-Fārsi*, or *Gāf*. It may therefore be perhaps necessary to say that the inferior dots of the ی are clearly marked in the British Museum coin.

The reading settled, I will now proceed to the identification of the mint. In the first place, the name occurs in a valuable Persian history of the Quṭb Shāhī Kings which has been incorporated by Briggs in his Translation of Ferishta. In the Head-note prefixed to the chapter devoted to the reign of Muḥammad Quli Quṭb Shāh we read: "The army takes Curnool and Nundial-marches and reduces Gundicotta (*Ganjicotta*), Moosulmooroo, and Kurpa (Cuddapa)." (*Rise of the Mahomedan Power*, Calcutta Reprint, 1910, III, 447). In explanation of this we are told that several years after founding the city of Bhāgnagar or Ḥaidarābād (998 A.H., 1589 A.C.), the King undertook a great expedition, and directed his minister Ameerool Moolk to march against the fort of Gundicotta with the greater part of his army. The place was in possession of a Hindu prince named Narsing Rāj, and "was celebrated for a famous temple to which the surrounding Hindoos of Beejanuggur, to the number of one hundred thousand, used to repair once annually, to pay their devotions, and to make large pecuniary offerings to the idol."[1] The fortress was surrendered by Narsing Rāj to the Musalmāns, after "a siege of some duration," and placed in charge of Sanjar Khān; but on the King's return to the capital, the neighbouring Rājās rose in rebellion and appear to have recovered it. (*Ibid.*, 452-456.)

---

[1] "There is in Gandikot," Tavernier informs us, "a pagoda which is considered to be one of the principal in India, where there are many idols, some being of gold and others of silver." Ed. Ball, II. 290.

About sixty years afterwards, Gandikota was again captured by the famous Gulkanda minister Mir Jumla, and readers of Tavernier will remember the jeweller's description of his interviews with the general soon after the latter's reduction of the fortress (September, 1652). *Travels*, ed. Ball, I, 260-1, 284-9.

The author of the Ma'āṣiru-l-Umarā says of Mir Jumla:

بنیروی شهامت و کارداني ولايتي را از مضافات کرناتک * * * مشتمل
بر معدن الماس و چندین قلاع استوار آهنین اساس مثل کنجي کوتهه
و سدهوت (که عبارت از بالاگهاتِ کرناتک و فرخنده بنیاد باشد و درینولا
حاکم نشینِ آن کرپه است و هیچ یک از اسلافِ قطب الملک را میسر
نشده بود) از کرناتکیان انتزاع نموده بتصرف آورد *

(Bibl. Ind. Text, III, 530, l. 14—531, l. 2.)

"By the sheer force of his valour and knowledge of affairs, a tract belonging to Karnāṭak, containing a diamond mine and several strong and impregnable (*lit.* with iron-foundations) fortresses like *Kanjikoṭṭah* (*or Ganjikoṭṭah*) and Sidhout, (which is really the Bālāghāṭ or Ḥaidarābād Karnāṭak of which the chief town is now Karpah [Kaḍapah], and which had not been acquired by any of the ancestors of Qutbu-l-Mulk), was now taken from the Karnāṭakians and brought into possession."

In another place, the same writer tells us that Kanji-Koṭṭah was one of the greatest fortresses, حصون معظمه of the Bālāghāṭ Karnāṭak. (*Ibid.*, III, 517, ll. 4. ff.)

Similarly, Grant Duff informs us that after the fall of the Gulkanda Kingdom, Gootee, Gurrumcondah, *Gandicotta and Sidhout*, which were included in the Ḥaidarābād Carnātic and were under Golconda, came into the possession of the Mughals (Reprint, p. 153).[1]

Coming down to later times, we find the following statement in the life of Ḥaidar 'Alī Khān in the *Maāṣiru-l-Umarā*:—

ودرحال تحریر (که سنه (۱۱۹۳) هزار و یک صد و نود و سه
هجري ست) بر سرِ کرپه ایلغار نموده قلعهٔ سدهوت و کنجي کوت وغیره

---

[1] So the *Imperial Gazetteer* also says: "It [Gandikota] was captured by the Golconda Sultān and held by Mir Jumla; later, it was the capital of one of the five Sarkārs of the Carnātic Bālāghāt, until it was absorbed by the Pathān Nawāb of Cuddapah." XII, 127.

محالات را متصرف گشته عبد الحكيم خان ميانه حاكمِ آنجا را قيد نموده
همراه خود بسري رنگ بتن برد *

(Bibl. Ind. Text, I, 612, ll. 12-15.)

"And at the time of writing, which is the year 1193 of the Hejira [1779 A.C.], he has suddenly marched against Karpah [Cuddāpah] and possessed himself of the fortresses of Sidhout and *Kanjikoṭ* or [*Ganjikoṭ*] and other districts, and taken prisoner and carried off its governor, 'Abdul Ḥakīm Khān Miyāna, in his train to Srirangapattan."

Let us now hear what a European contemporary, Major Charles Stewart, has to say about the matter :—

"In the year 1776, Hyder commenced his march to the southward, which led him through the province of Gūty, a very valuable country, formerly an appendage of Kuddāpah, but which in the year 1758 had been made over to the Mahrattas, in lieu of *Chout*. In this province were situated several towns and forts of consequence, as *Gunjcotta*, Gorrumcondah, Pennecondah and Gūty. The governor of this province was named Morāw (*sic*) Rāo," who was obliged to capitulate. "Hyder broke the articles of capitulation, and sent Morāw Rāo a prisoner to Seringāpatam, where he probably died in captivity: after which the usurper, having established his own collectors and officers over the district, returned to his capital." Memoirs of Hyder Aly Khan, prefixed to the Catalogue of the Library of Tippoo Sultan, pp. 24-5. See also pp. 26-7.

Speaking of events which occurred about fifteen years later, the same writer says :—

"On the 6th of June [1791] the allied armies, [the English, the Nizām and the Mahrāttās during the first Mysore War] commenced their march......and arrived in the vicinity of Bangalore. Here the allies separated ; the greater part of the Mahrattas proceeded towards Chittledroog, the Nizām's cavalry towards *Gunjcotta*, and the English to Bangalore." (*Ibid.*, p. 64.)

The same events are thus described by Grant Duff :—

"The army of Nizam Ally, with the two Madras battalions which continued to the northward, took *Gandicottah* on the Pennar, and laid siege to Gurrumcondah." [1791.] Bombay Reprint, p. 490.

James Mill's account is as follows :—

"By the army of the Nizām, only two objects had been effected during the war : the reduction of *Gunjicottah*, and that of Kopaul." Mill and Wilson, *History of British India*, ed. 1858, V. 291.

Lastly the *Imperial Gazetteer* thus puts the matter :—"It was here [*Gandikot*] that Fateh Naik. the father of the great Haider Ali. first distinguished himself. Haidar improved and garrisoned the fort, but it was captured by Captain Little in the war with Tipū in 1791." XII, 127-8.

This string of passages leaves no room for doubt that Ganjikottah, Gunjcotta, Gunjicottah and Gandicottah are different forms of one and the same place-name, *viz.* the Gandikot of the *Imperial Gazetteer.*

One remark more and I have done. "In Farruk͟hsiyar's currency," writes Mr Lane Poole, "Arkāt, A‘aẓamnagar, and Murshidābād appear for the first time; and *a diminutive gold Coinage, resembling that of Southern India, forms a new feature*; it issued from Imtiyāzgarh....... Gūti, Gangpūr (in Chutiā Nāgpūr,) and another mint which is illegible" B.M.C. Introd., lviii. Mr. Lane Poole's reading of the mint-name and its location were erroneous, but he was able to see that the coins belonged to the peculiar type of South Indian gold pieces, which issued from the mints of Adoni and Gūti.[1] It is permissible to say that the present ascription of them to a place in the neighbourhood of Gūti and Adoni receives confirmation from the family resemblance specially noted by that expert.

The College, Junāgadh, S. H. HODIVĀLĀ.
4th April, 1917.

(*v*) GULSHANĀBĀD.

The mint-name Gulshanābād was first deciphered by Dr. Taylor on the Rupee of Farruk͟hsiyar discovered by him in the Treasury of the small State of Limbdi in Kathiāwāḍ, and described and figured in Num. Sup. XIV (p. 572, Pl. xxxvi, No. 10). Dr. Taylor himself was at first not quite sure of his reading, but it has been "confirmed by the discovery of a second and similar Rupee" of the same mint which is in Mr. Whitehead's Cabinet, (Mint-list, J.A.S.B., 1912, p. 437), and Gulshanābād has been recognized as one of the two hundred and odd mints of the Mug͟hal Emperors of India. But where was this Gulshanābād? Dr. Taylor confessed his inability to say anything more about its situation than repeat Dowson's conjecture that it was somewhere in Baglānā, near Junir." (Elliot and Dowson, *History of India*, VII, 337 and 345).

The place-name Gulshanābād occurs frequently in the Mug͟hal chronicles (*Ma‘āṣir-i-‘Ālamgīri*, Bibl. Ind. Text, pp.220, 221, 239, 243; K͟hāfi K͟hān, Bibl. Ind. Text, II, 383, 402, 524, 743, 890, 891; *Ma‘āṣiru-l-Umarā*, Bibl. Ind. Text, I, 187, 364; II, 293, 322), but there is nothing in any of these passages to indicate where it really was. All that can be gathered from some others is that Gulshanābād was a part of what was then called the Niẓāmshahi Kokan, and in the neighbourhood of Rāmsij (K͟hāfi K͟hān, II, 281), that it was somewhere in Baglānā (*ibid.*, II, 401), that it was in the vicinity of Sangamner,[1] Chāndor[2] and Ankolāh[3] (*ibid.*, I. 524) and also of Nāsik (*ibid.*, I, 274). This is not very illuminating, and such vague statements are all but useless for a satisfactory identification. Fortunately, we are not without other and surer guidance. In the first place, we learn from Scott Waring's valuable Account of the Deccan Ṣubas that the 'Sircar of Sangamnere in the Subah of Aurangabād' contained, when that statement was compiled (about 1790 A.C.), 'eleven perganahs,' viz. :—

---

[1] **Adoni is in Lat. 15° 38′ N., Long. 77° 17′ E.**
Gūti is in Lat. 15° 7′ N., Long. 77° 39′ E.
Gandīkot is in Lat. 14° 47′ N , Long. 78° 16′ E.

Sangamnere, Ahmedabad and Patwad, Bélawa, Trimbac, Japherabad or Chamber, Dadori, Dhaderphal, Sindher, *Nassick or Gulshanabad*, Varia.[4] (Waring, *History of the Mahrattas*, pp. 238-9.)

An equally good, if not better authority, Robert Orme, says :—

"According to our MSS. of the Deccan, Tirmeck is a pergunnah or district of Sangamner, which is one of the Circars or governments of the Subah or province of Aurangabad. The river Gungah comes from the mountains of the Concan, on which Tirmeck is built, and passeth through the middle of the Circar of Sangamner to Goulchonabad commonly called Nassick, the distance twenty coss; below which the bed of the river becomes much broader. Numbers of Hindoos resort every year from the most distant parts, to wash at Tirmeck on the day that the sun enters the Scorpion Every twelfth year, the multitude is much greater and some come on every day in every year." (*Historical Fragments of the Mogul Empire*, Ed. 1805, pp. 285-6. See also Grant Duff, 49, 51, 52, 284: Mill and Wilson, *Hist. of British India*, viii, 241). It is scarcely necessary to say that Orme's Tirmeck is Trimbak (from Trayambak, 'the three-eyed', a name of Mahādeo), which is 20 miles from Nāsik town. Trimbak, says the *Imperial Gazetteer*, (XXIV, 49), is "a place of Hindu pilgrimage, and besides being visited by all the pilgrims who go to Nasik, has a special fair in honour of Trimbakeshwar Mahādeo, held when the planet Jupiter enters the sign of Leo, which event happens once every twelve years." Orme's Gungāh is the Southern Gangā, the Gangā Gautami or Godāvari on which Nāsik is situated. (Jarrett, *Āīn.*, Tr. II, 228 and note). It is also stated in Jonathan Scott's *History of the Dekkan* that one of the Mahratta chiefs "in the service of the governor of Nassick or Gulshanābād" kept a band of robbers and openly traded in plunder. (*Op. cit.*, II, p. 109 *apud Bombay Gazetteer,* XVI. p. 191.)

---

[1] Sangamner, 19° 34′ N., 74° 13′ E., 49 miles N.W. of Aḥmadnagar.

[2] Chāndor (or Chāndwad), 20° 20′ N., 74° 15′ E., 40 miles N.E. of Nāsik.

[3] Akolā, Tālukā in Aḥmadnagar District (*Imp. Gaz.* V. 189).

[4] Patwad is Pātodā north of Vinchūr; Dadori is Diṅdori, a Tālūkā in Aḥmadngar district; Bélawa is Yeolā in Nāsik District; Sindher is Sinnar in the same district. (*Imp. Gaz.*)

We may take it then that these Rupees of Farrukhsiyar were issued from the Nāsik mint and that Gulshanābād was the name given by the Mughals to that ancient Hindu town, probably on account of the fertility of the district in which it is situated and the neighbourhood. The excellence of the fruits and gardens of Bāglān or Baglānā and the Niẓām Shāhi Kokan, in which Gulshanābād was then included, are the theme of the praise of Abul Faẓl (Jarrett, *Aīn.*, Tr. II, 251), the author of the *Bādshāhnāma* (Bibl. Ind. Text, II, 105, or Elliot and Dowson, VII, 65-6), Khāfi Khān (Bibl. Ind. Text, II, 401 or Elliot and Dowson, VII, 345), and the compiler of the *Mā'aṣiru-l-Umarā* (I. 415). "Bāglān is a region of hills and streams, and has long been noted," we read in the *Imperial Gazetteer*, "for the excellence of its *garden cultivation,*" (New Edition, VI, 190 ; see also XVIII, 404.) It is bounded on the south by Nāsik and is at present a part of Nāsik District which has been from very old times famous for its grapes, three varieties of which are still cultivated. (*Ibid.*, XVIII, 400, 404). Indeed, the popular etymology of Bāglāna or Baglānā is traced to *Bāgh*, garden, which is synonymous with '*Gulshan.*'

It would also appear that the division of Nāsik city which is inhabited by the Muhammadans is still known as Gulshanābād, and a glance at that useful and inexpensive publication, the Post Office Guide, will show that Gulshanābād is the "Old name for Nasik." The following passage from the local Gazetteer may be also quoted. "From the Bahmani Kings early in the sixteenth century, it [Nāsik] passed to the Ahmadnagar dynasty, and was wrested from them by the Moghuls, about a hundred years later. By the Musalmān rulers, the name of Nāsik was changed to Gulshanābād, the City of Roses, and it was made the headquarters of a division......... According to local records, the country round Nāsik passed to the Peshwā in 1751-52 (Fasli 1161), when the name of Gulshanābād ceased, and the old name of Nāsik was revived." *Bombay Gazetteer*, XVI, 535-6.[1]

Junāgadh, S. H. HODIVĀLĀ.
20th October, 1916.

(*vi*) KARĀRĀBĀD.

I am not aware that any attempt has been made to locate the mint of Karārābād from which a few very rare rupees appear to have been issued in the reigns of Jahāndār Shāh and Farrukhsiyar (Num. Supp. II and VIII). The task is indeed a difficult one, for the name does not occur in any modern Gazetteer or Atlas, or in any of the Musalmān annalists of the period. But in that very valuable Account of the Deccan Ṣubas and their Revenues, as they were estimated about 1790 A.C., which is appended to Scott Waring's *History of the Mahrattas*, I find the following statement: "In the Sircar of Raibag [Subah of Beejapore] there are twelve perganahs:

---

[1] Gulshanābād is said in the *Imperial Gazetteer* (XII, 383) to be the عُرف of Jāorā, the capital of a small State in Central India. But the State itself dates only from the nineteenth century, and Jāorā was only a small Rājput village before it was made his capital by Ghafūr Khān. (*Ibid.*, XIV, 66). Jāorā is therefore easily eliminated from the discussion.

Havely[1] [i.e. the town of Rāibāg itself], Codal, Colapore, Carhar (abad), Khauri, Ajode, Nimsor, Mainy, Valwa, Nasore, Varuja, Bhalani."

Now it is easy for any one possessing some acquaintance with the geography of the Bombay Dekkan, to identify several of these names. Raibag is the Rāybāg of the *Imperial Gazetteer,* and a town in the Kolhāpūr State situated in 16° 30′ N. and 74° 52′ E. 24 miles south-east of Shirol. (New edition, XXI, 277).[2] Codal is probably Kudāl, one of the sub-divisions of the neighbouring state of Sāvantwādi (*ibid.*, XXII. 154). Colapore is the chief town (16° 42′ N., 74° 16′ E.), of the state of Kolhāpūr. Mainy is the Māyni of the *I.G.*, a town in the Khatāo taluqā of Satārā district (17° 26′ N. 74° 35′ E.) 40 miles south-east of Satārā city. (XVII, p. 240.) Valwa is Vālva (17° 2′ N., 74° 22′ E), the former head-quarters of the Taluqa of the same name in Satārā district (XXIV. 298). Nasore is probably Mhāsvad (17° 38′ N., 74° 48′ E.), a town in the Mān Taluqa of Satārā district, 51 miles east of Satārā town. What then is Carhar? I have little doubt that it is the Karād of the Gazetteer, "the head-quarters of a Tāluqā of the same name in Satārā district, which is situated in 17° 17′ N., 74° 11′ E., at the confluence of the Koynā and the Kistnā, 31 miles south-south-east of Satārā town....... It is referred to in ancient writings as Karahākada. and has given its name to a sub-division of Brāhmans....... The mosque of Karād is interesting, as it contains nine Arabic inscriptions. One of these shows that it was built during the reign of the fifth Bijāpūr King, Ali Ādil Shāh (1557–1579) by one Ibrāhim Khān" (XV, 19). It is clear that the town was a place of some importance not only in very ancient times (it has a group of 54 Buddhist caves of a very plain and early type, only three miles to the south-west of it), but even under the Musalmān rulers of Bijāpūr. It is the Kurār of Grant Duff and is mentioned frequently in his *History* (Bombay Reprint, pp. 5, 36, n. 55, 66, 79, 82, 127, 134, 192, 271).

---

[1] "The word Havély, in the Hindvy language, literally signifies palace. In a more extensive sense, it means the residence of the chief of a district, and thus comes to mean the town in which he lives. Havély lands are those dependent on the principal township of the district, and the chief himself becomes styled Havélydar or Hawaldar." Briggs, *Rise of the Mahomedan Power*, III, 449-50. See also Wilson, *Glossary of Judicial and Revenue Terms, s. v.*

[2] Rāybāg is mentioned by Tavernier (ed. Ball, I, 182) as the place where the king of Bijāpūr used to dispose of his pepper.

We may take it then that this 'Carhar' is the Karād of the *Imperial Gazetteer*, but the most noteworthy thing in the passage is the fact of the word *abad* having been added by Scott Waring in parenthesis after 'Carhar.' It seems to me to clearly indicate that the writer was aware that the Hindū name of the town was Carhar [Karhād or Karād], and that the Musalmān conquerors had, in accordance with a common practice, given it a Persian form, by adding the termination آباد and altered it to Karārābād.

I am by no means oblivious of the fact that the solitary occurrence of the form 'Carhar (abad)' in one writer, however well-informed, can scarcely be said to establish an *absolutely* reliable identification; but this is all that can be found in reference to the subject, and I crave permission to lay it before the readers of this Journal, as a tentative suggestion which may hold the field until something more satisfactory is forthcoming. I ought perhaps to add that in Mr. Jadunāth Sarkar's *India of Aurangzeb* (pp. cxii and 168 n.) a place called Kalarabad or Mandavgaon, 17 miles N.N.W. of Chambhargoonda, and 19 miles south of Ahmadnagar fort, is mentioned, but the name has not been accented, and it is impossible to say how Kalarabad is to be pronounced. Besides Mandavgaon is a mere village which does not appear on any map or atlas, except the voluminous Indian Atlas (Scale, 1″ = 4 miles), issued by the Survey of India Office. I venture to think therefore that this Kalarabad may be for the present dismissed, as scarcely likely to have been selected for the site of a silver-mint.

The College, Junāgaḍh, S. H. HODIVĀLĀ.
1*st November*, 1916.

(*vii*) LACHĪ LANJĪ, LAKHĪ (?) [KANJĪ].

Among the novelties described in Dr. Taylor's article on "Some Coins from the Limbdī Treasury" (Num. Sup. XIV, art. 89) is a rupee of Aurangzeb, which in spite of being otherwise of the ordinary type, has been figured (No. 5, Plate XXXV) in the hope that "some coin-collector may be able to suggest the correct reading" of the mint-name, which had defied all his efforts. I understand that Mr. Nelson Wright has a duplicate in his cabinet, and that the collection of Mr. G. B. Bleazby, which is now in the British Museum, also contained another rupee from the same unknown mint. A fourth specimen in an indifferent state of preservation is in the Lāhore Museum, (P.M.C. No. 1951), and Mr. Whitehead has suggested the reading "*Lachī*," stating at the same time that the mint is "not certain." Others have proposed "*Lanjī*" and "*Lakhī*." It seems to me that all these decipherments are untenable, inasmuch as they overlook the stroke of the ک which is clearly visible on the plate, and which I have seen also on the coin itself in Dr. Taylor's possession. The second and third letters of the name are undoubtedly a ن and a ج respectively, and the dots of both are carefully marked in the lower part of the field, the other twelve points being accounted for by the ten dots in two clusters of five dots each, and the superior and inferior *Nuqṭas* of the ض and the ب of ضرب. This ensures the rejection of *Lachī* as well as *Lakhī*, which are inadmissible on other grounds also; the first in that no place of that name is known, the second because though a Lakhī or Lakhī Jangal is frequently mentioned in the Musalmān chronicles, the name is never spelt with a خ but invariably occurs in the form لکهي (*Ma'āṣir-i-'Ālamgīrī*, Bibl. Ind. Text, p. 497; *Khāfi Khān*, Bibl. Ind. Text, I, 114, 124, 149; *Ma'āṣiru-l-Umarā*, Bibl. Ind. Text, I, 141, 528, 603, 774; II, 286, 439, 450, 712, 826; III, 311, 373; *Bādshāh-Nāma*, Bibl. Ind. Text. Vol. I, Pt. i. 288, 476; I, Pt. ii, 10, 64; II, 236, 477; *Āin-i-Akbarī*, Bibl. Ind. Text, I, 382, 556; *Akbarnāma*, Bibl. Ind. Text. III, 601, 608).

This remarkable consensus not only militates decisively against this particular reading, but must bring home to our minds the necessity of carefully noting the orthographic usage in regard to place-names, which appears to have been *fairly* uniform, at least among the superior class of writers.

If then it is impossible to accept any of these suggestions, what is the true reading? I submit that it is کنجي Kanji. Kinji or Kunji, according as the diacritical mark is supposed to have been a *zabar*, a *zīr* or a *pīsh*. کنجي was the name by which Kānchi, the modern Conjeeveram (which is itself a corrupt form of Kānchīvaram or Kānchīpuram), was known to the Mughals.

In the chapter devoted to 'Ali Mardān Khān Ḥaidarābādī, in the Biographical Dictionary called the *Ma'āṣiru-l-Umarā*, we read:—

مير حسيني نام داشت از نوكرانِ عمدهٔ ابو الحسن والي حيدرآباد بود
سالِ سيم جلوسِ عالمگيري بعد فتحِ گلكنده ملازمِ پادشاهي گشته بمنصب
شش هزاري و خطابِ عليمردان خان بلند آوازه گرديد و بتعلقه داري كنجي
مضافِ كرناتک حيدرآباد سرفرازي يافت ۔ سالِ سي و پنجم (كه سنتاجي
گهور پوره بكومکِ چنجي كه در محاصرهٔ فوجِ پادشاهی بود) رسيد نامبرده

بدفع او کمر بسته بر آمد و بعد مقابله و رو داد زد و خورد دستگیر شد و افیال
وغیره اسباب بغارتِ مقاهیر در آمد بعد دو سال مبلغ معتدبه داده مخلصي
حاصل کرد *

(Bibliotheca Indica Text, II, 824).

" His name was Mir Husainī, and he had been one of the principal servants of 'Abulḥasan, the ruler of Ḥaidarābād. In the thirtieth year after the accession of 'Ālamgīr, and after the conquest of Gulkanda, he entered the Imperial service, and was distinguished (*lit.* became famous) by [acquiring] the rank of [a Commander of] six thousand, and the title of 'Alīmardān K͟hān, and was exalted by being made Ta'aluqdār of *Kanchi* belonging to the Ḥaidarābād Karnātak. In the thirty-fifth year [1102–1103 A.H.], when Santāji Ghorpūrah marched to the relief of Chinjī, which was being besieged by the Imperial forces, the above-mentioned ['Alīmardān K͟hān] girded up his loins and overtook him. After an encounter, and the exchange of blows (*lit.* the occurrence of striking and receiving blows), he ['Alīmardān K͟hān] was taken prisoner, and the elephants and the rest of the baggage were plundered by the enemy (*lit.* ' the conquered ones,' a name by which the Mahrāttās are generally spoken of by the Mug͟hal historians). Two years afterwards, he obtained his release on paying a large sum."

The *Ma'āṣiru-l-Umarā* is a late authority, having been begun only about 1155 A.H. and completed so late as 1194 A.H. (1780 A.C.). [Elliot and Dowson, VIII, 187–190], but there is every reason to believe that its source, in this instance, was the contemporary chronicle of Aurangzeb's operations in the Dekkan, which was written by a Kāyath, named Bhimsen, and is entitled *Nusk͟ha-i-Dilkushā.* The original is still unpublished, but there is an abridged translation in Jonathan Scott's *Dekkan,* where it is called the " Journal of a Boondelah Officer." This Bhimsen, a Kāyath born at Burhānpur, was the nephew of Diyānat Rāi, officiating Diwān of the Dekkan, and " spent most of his life as the agent of Dalpat Rāo, the *Bundelā* chief of Datia who long fought in Aurangzeb's wars in the Deccan." The Journal has been pronounced to be " of the highest importance to the historian, especially for Deccan affairs " (Sarkār, Aurangzeb, Vol. II, p. 304), having been written by an eye-witness about 1120 A.H. (Irvine, *Army of the Mog͟huls*, p. 302). Jonathan Scott has thus rendered the passages from Bhimsen's Journal which the author of the *Ma'āṣir* had evidently under his eye.

" Meer Hooseinee, a principal officer of Abou Houssun, being raised to the rank of six thousand and title of 'Ali Merdān K͟hān, was appointed to the foujedary of *Kinjee,* dependant on Hyderabad Carnatic, A.H. 1102 (A.D. 1690).' Scott, *op. cit.*, ed. 1794, Vol. II, p. 76. " Intelligence arrived that Suntah was following Dhumnah, and arrived at Cavereepauk ten koss from Kinjee, and that Ali Merdan K̲h̲ān, Fojedaur, had marched to oppose him thinking himself superior. Suntah had a very large force, and in the action a numerous body of Bhela foot which the K̲h̲ān had hired, deserted to the enemy, so that he was obliged to fly and regain the post of *Kinjee*, but was taken prisoner, with many of his officers, and all his elephants, camels, horses and baggage were plundered." (*Ibid.*, II, 89)

But where was this Kinjee ? Bhimsen himself shall tell us through the mouth of his translator.

"The tedious pass extended for near forty coss from Suddum to *Kinjee.* The last is one of the seven chief worshipping places of the Hindoos, which are as follows: Ajodeah or Oude, Mutterah, Pyauge or Aleabad. Kasee or Banares, Kinjee, Ontkapooree and Dowaroutee. These seven have a superiority above all the other holy places of resort. The environs of Kinjee cannot be less in extent than ten coss. There are two temples, Seo Kinjee and Bishen Kinjee, the walls round each of which are not less extensive than the citadel of Beejapore, and within them are innumerable edifices, the cost of which cannot be attained by guess....... There are every way a great variety of tanks, which are all lined with stone....... These are called in Hindoeh, *Kund Gobind* collectively; but each has a separate name and season appointed for bathing in it. The court of Seo Kinjee has been formed into a citadel with bastions and battements, and in a part of it resides the Foujedaur...... From near the fort of Adonee to Kernole, [Karnūl] Kinjee, Jinjee, and hence to the sea-coast, there is not a village without a temple dedicated to either Luchmun or the god Ram. Raou Dalpat having at length arrived at Kinjee, took with him Ali Merdaun K̲h̲ān, the foujedaur of that place, and moved to the fort of Bindwastnee, which is twelve coss from Jinjee, then marching by Velore, a fort equal to A̤hmednuggur, reached the neighbourhood of Jinjee." Scott, *op. cit.*, II, 84-85.

It is clear from these passages that كنجي Kanjī (or Kinjī or Kunji) was a fortified position of some importance, which was the head-quarters of a Faujdār or Taʿaluqdār in the 30th year of Aurangzeb's reign, and that it was one of the seven chief worshipping places of the Hindūs in India. As to its situation, it was only ten coss distant from 'Cauvereepauk' and in the vicinity of Bindwastnee (*i.e.* Wandewash). Jinjee and Vellore. Now Kāveripāk (12° 54′ N., 79° 28′ E.), Vellore (12° 55′ N., 79° 9′ E.), and Wandewash (12° 31′ N., 79° 36′ E.), are all in North Arcot district, while Jinjee (12° 15′ N., 79° 25′ E.) is in South Arcot. Conjeeveram, 12° 50′ N., 79° 42′ E. is in the immediately adjoining district of Chingleput. It is further said that this *Kinjee* was ten coss distant from 'Cauvereepauk.' Conjeeveram, or Kānchipuram, is, according to Malleson, just sixteen miles from Kāveripāk (*Founders of the Indian Empire, Lord Clive*, ed. 1882, p. 106).

I have said that the كنجي of the *Ma'āṣiru-l-Umarā*, and the Kinjee of Bhim Sen, is no other than the modern Conjeeveram Any doubts on that head must be dispelled by the following quotations from European authors. Francis Buchanan writes: "2nd July, I entered the Company's Jaghire and went to Conjeveram, *which by the natives is universally called Kunji.*" (*Journey from Madras through Mysore, Canara and Malabar*, Ed. 1807, Vol. III, 466). In the General Index to the work we are told that Conjeveram is "a town, see Kunji." Then again, in his description of Conjeveram itself there is a clear reference to the "Seo Kinjee" and "Bishen Kinjee" into which the town was divided according to the contemporary work which Scott has translated. "Most of the houses," Buchanan informs us, "are inhabited by the Brahmans, belonging to two large temples, that are dedicated to *Iswara* and his wife *Cāmachuma*...... About three miles at the Lesser Conjeveram, is another grand temple dedicated to Vishnu, who has a Mandapam for his reception at the two visits he makes in the year to Iswara. Siva returns the visit once a year only." (*Ibid*, Vol. I, pp. 12-13).

It is scarcely necessary to point out that the "Lesser Conjeveram" with its "grand temple dedicated to Vishnu" is identical with the "Bishen Kinjee" of Bhim Sen or Scott. This "Bishen Kinjee" is again spoken of as "Visnoo Kunchee" by another writer in such a manner as to leave no doubt of its identity with a part of Conjeeveram. In the valuable "Statement of Deccan Revenues made out from Mahratta records," which is appended to Scott Waring's history of that people, and which contains a list of the sircars and perganahs into which the six Dekkan ṣubas were divided, we read:

"In the Subah of Hyderabad, there is also the Circar of Kunchee, containing 15 perganahs.

Havely [i.e. the town of Kunchee itself], Visnoo Kunchee, Kurgoolee, Káwereebala [Kāveripāk], etc." (Waring, *op. cit.*, p. 268).

Lastly, Manucci also refers to Allis Marda Can's ['Alī Mardān K͟hān's] connection with *Canchy*, of which he says that it is "twenty leagues inland from Madras." It was in old days "a great city, whence the Hindus to this day hold it in great veneration, owing to the existence of large and lofty temples. Each one of these would make an excellent fortress, and inside of them are many buildings with figures of idols and gilded paintings of the lives and infamies of their false gods. In the midst is a large tank, the four sides built of large stone." (Irvine, Manucci's *Storia do Mogor*. III, 243). In another place, he includes *Canchis* in the Karnātik, among the seven principal

"Holy Places" of the Hindus, the other six being Maya [Māyāpur, close to Hardwār], Maturā, Cāxis [Kāshi], Evantica [Avanti, i.e. Ujjain], Puris [Pūri or Jagannāth in Orissa] and Darahotis [Dwārāvati, i.e. Dwārkā in Kaṭhiāvāḍ]. *Ibid.*, III, 244-5. He also refers to 'Alī Mardān Khān's capture by "an officer of the Shivā Ji called Santāngape" [Santāji Ghorpadé] and attributes it to the treachery of his own chief, Ẕul'fiqār Khān, who hated him. *Ibid.*, III, 273.

One word more as to the spelling of the name as it appears on the coins, may perhaps be not altogether out of place. It may be urged that the correct form of the name is Kānchīvaram or Kānchīpuram with a long 'a' after the first consonant, and that we ought to have had كانچي and not كنچي (without an 'alif') on the coins. I may be permitted to say that this difficulty, which has seemed insuperable to a very friendly critic, admits of an easy solution. That solution is that كنچي is only one of many place-names, which drop the long 'a' which they have in Sanscrit or in the popular pronunciation. when transliterated into Persian and written in books or inscribed on coins. Thus :—

Kānyakubja becomes قنوج, Kāshmir كشمير, Māndū' مندو, Vārānasi بنارس, Bāglāṇa (बागलाण) بگلانه, Sātārā (सातारा) (in Mahrātti) ستارا, Pāṭan (Guj. पाटण) پٹن, Pāthri پتهري, Ārākān رخنگ, Bājaur بجور, Tāpti تپتي, Chāmpāner چنپانير, Mānjrā منجره [1]

There is therefore nothing out of the common in the form كنچي, and we may take it that the coins under discussion were issued from the town which is now known as Conjeeveram at some time after the conquest of the dominions of the kings of Gulkanda by the Mughals in the thirtieth year of the reign of Aurangzeb. It is perhaps necessary to add that this Kanjī or Kinjī (or Conjeeveram in Chingleput) is not identical with

---

[1] *Imp. Gaz.*, XIV, 370, S.V. Kanauj.

Ib., XVII, 171, مندو on coins, P.M.C. Intr., cx.

Imp. Gaz., VI, 190, 192, بگلانه in Khāfi Khān, II, 247, 274, 280, 399; *Ma'āṣir-i-'Ālamgīri*, 470.

Imp. Gaz., XXII, 128; ستارا *Ma'āṣir-i-'Ālamgīri* 336, 420.

Pāthri in Parbhāni District, Ḥaidarābād State, *Imp. Gaz.*, XX, 30, پتهري in *Ma'āṣiru-l-Umarā*, I, 356, 489, 700.

رخنگ in *Ma'āṣir-i-'Ālamgīri*, 30, 31, *'Ālamgīrnāma*, 484, 556, 560; Bājaur *I.G.*, VI, 219.

تپتي in Khāfi Khān, II; 555, 619, 854, 875.

Mānjrā River in Ḥaidarābād State, *I.G.*, XVII, 197; *Bādshāhnāma*, I. i. 331, 361.

Ginjī or Gingee in South Arcot. The name of the great fortress which defied the arms of Aurangzeb for nearly eight years, and was afterwards captured by Bussy, is written Ginjee or Ginji by Grant Duff, Mill and other Anglo-Indian historians, but the spelling found in the Musalmān writers is always جنجی (*Ma'āṣir-i-Alamgīrī*, Bibl. Ind. Text, 339, 344, 350, 352, 355, 359, 362, 364, 391, 400. 502), or چنجی (Khāfi Khān, II, 404, 413, 418, 450, 534; *Ma'āṣiru-l-Umarā*, II, 94, 270, 500, 875; III. 855, 856). It is also not unworthy of notice that جنجی is the form found on coins (Num. Sup. XIV, 570).

Junāgadh. S. H. HODIVĀLĀ.

(*viii*) MĀNGARH.

Māngarh is a mint-name in the Mughal series of which the reading itself is not entirely free from doubt, and in reference to the identification of which nothing beyond conjecture has been hitherto advanced. Copper coins struck at Mānghar (or Mānghīr ?) in the early years of Akbar's reign are recorded to have been in the White King collection, and also in Major Vost's cabinet. The reverse closely follows the Sūri type, as may be perceived from the specimen (dated 968 A.H.) which is figured in Mr. Valentine's *Copper Coins of India*" (pp. 66-7). The name has been there read Mānghīr, but there is nothing on the coin itself to warrant the interpolation of an ی between the 'h' and the 'r,' and Mr. Whitehead's reading "Mānghar' appears to me to be the correct one.

But supposing that the name is 'Mānghīr,' it seems to me very hazardous to identify it with Mongyr or 'Monghyr' in Bihār. The name of that town is never spelt by any Persian writer of reputation except as مونگیر or منگیر or مُنگیر. Abūl Fazl mentions Mongyr several times in his works, but he always writes it in one or other of these three ways and in no other. (*Āīn-i-Akbarī*, Bibl. Ind. Text, I, 417, 419; *Akbarnāma*, Bibl. Ind. Text, III, 22, 107, 141, 307, 308, 324, 334, 398.) Badāonī's spelling is منگیر in *Muntakhabu-t-tawarikh*, Bibl. Ind. Text, I, 349 as well as in II, 282. Niẓāmuddīn Aḥmad also rejects the 'h' and adheres to the form مونگیر (*Ṭabaqāt-i-Akbarī*, Lakhnau Lithograph, p. 336, *ll.* 19, 21).

All these three are writers who flourished in the reign of Akbar, and their testimony would be conclusive as to the orthography of the period, even if it had been at variance with the form adopted in subsequent times. But later writers also do not depart from the older spelling, and مانگهیر receives no countenance from any one of them. We have منگیر in the *Bādshāh*-

nāma, (Bibl. Ind. Text, Vol. I, Pt. 2, pp. 1, 272; Vol. II, p. 68), and the *Maāṣiru-l-Umarā* (Bibl. Ind. Text, II,170). Muḥammad Kāẓim of the *'Ālamgīrnāma* shows a decided preference for the additional 'wāv,' and writes مونگیر no less than a dozen times (Bibl. Ind. Text, pp. 31, 211, 223, 336, 337 340, 343, 393, 494, 495, 650 915). Khafi Khān (Bibl. Ind. Text, Vol. II, 75, 100) and the author of the *Maāṣir-i-'Ālamgīrī* adopt the same form (Bibl. Ind Text, p. 21) which occurs once in the *Maāṣiru-l-Umarā* (Bibl Ind. Text, III, 411) also.

It is possible that this reasoning will make no appeal to those who, bewildered by the embarrassingly abundant various readings of *obscure* proper names which are proudly displayed in some of our editions and translations of the Persian historians, have come to entertain the notion that there was no uniform or recognised orthographic usage at all in reference even to the *well-known* place-names. I beg therefore to urge a point which seems to me to militate decisively against the attribution of these coins to Mongyr in Bihār. That point is that Mongyr was not included in Akbar's dominions at all in 968 A.H. All Eastern India beyond the district of Jaunpūr was then outside the Mughal limits, and in the possession of Sulaimān Kararānī, of whom Abūl Faẓl says in his chronicle of the 17th year that he "exhaled the breath of power in Bengāl, Bihār and Orissā." (*Akbarnāmā*, Tr. Beveridge, III, 5-6.) Sulaimān died in that year (980 A.H.), and the news reached Akbar when he was engaged in besieging the castle of Surat. The Khān-i-Khānān Mun'im Khān, the governor of Jaunpūr, was then commanded to undertake the conquest of Sulaimān's territories, and it was only when Mun'im was found unable to achieve any signal success, that the Emperor himself marched in great force towards Bengal. The first-fruits of the campaign were the conquests of Hājīpūr and Patnā after a sanguinary struggle in 982 A.H. (*Ṭabaqāt-i-Akbarī* in Elliot and Dowson, V. 372, 377-9; *Badāonī*, Tr. Lowe, II, 166, 176 ff: 'Abūl Faẓl, *Akbarnāma*, in Elliot and Dowson, VI, 39-44: Von Noer, Tr. Mrs. Beveridge, I, 214-229.) Indeed, it stands out clearly from a fact incidentally mentioned in the *Akbarnāma* that Mongyr was even so late as 981 A.C. in the possession of Dāūd, the son of Sulaimān Kararānī. It was at Mungīr that Dāūd had his cousin, Yūsuf, whom he regarded as a possible rival, put to death, and it was this murder which alienated Yūsuf's father-in-law, Jahān Khān Lodi, the most powerful and devoted of the adherents of his house. By the subsequent assassination of Lodi himself, he uprooted, as Badāonī quaintly puts it, "the plant of his prosperity with the spade of calamity," and the bread of the Khān-i-Khānān and the Mughals "fell into the butter." (*Akbarnāma* in Elliot and Dowson, VI, 41; Beveridge's Translation, III, 31, 97-100; Badāonī, Tr. Lowe, II, 177-8; Von

Noer, *op. cit.*, I. 217.) It seems to me therefore out of the question to suppose that any coins should have been struck in Akbar's name at Mongyr so early as 968 A.H.

But if Mongyr is inadmissible for more than one reason, where is this Mānghar to be looked for ? I beg to be permitted to place before the readers of this Journal the very respectable *historical evidence* that is available in favour of its identification with the great fortress of Mānkōt. I am not aware of its having been set out before.

In the first place then, Badāonī has three references to that great frontier stronghold, in two of which it is called Māngarh, and in one only Mānkōt.

" Islem Shāh, in order to remove the cause of the mischief [the rebellion of the Niyāzis who had taken refuge with the Ghakkars], marched with a large army, and reaching the Punjāb took up a strong position in the northern hill range, and by way of guarding his headquarter-post built five forts, *Mānkōt*, Rashidkōt and others." (Ranking's Translation, I, 498.) A little further on we read : " At the time when Islem Shāh had sent troops against the Ghakkars and the Jānohā party who were strongly entrenched on the banks of the river Behat, he himself was occupied in building the fortress of *Māngarh.*" (*Ibid.*, p. 500).

Once more Badāonī mentions Māngarh in describing an attempt made upon Islām Shāh's life in its neighbourhood. " Among the events which happened during the time that Islem Shāh was encamped at Bin, was the following :—One day in the interval between two times of prayer, Islem Shāh was sittng at ease upon his roadster, and was proceeding with a small escort from the camp to visit the fort of *Māngarh*, which lies at a distance of five or six *Krohs* or thereabouts, in accordance with his usual custom, when suddenly a man sprung up in front of him and blocking the road, holding a sword concealed in his armpit,......aimed a blow at him." (*Ibid.*, pp. 526-7.)

This event is related by Nizāmu-d-dīn Ahmad and Ferishta in almost identical terms, with the only difference that the place is called by them *Mānkōt.* It will suffice to quote the passage from the version of Briggs. " In this expedition, a person having concealed himself one day in a narrow path, by which Selim Shāh was ascending the mountain of Mankote, rushed on him with a drawn sword." (*Rise of the Mahomedan Power in India,* Calcutta Reprint, II. p. 135 ; *Ferishta,* Lucknow Lith., I, 231 ; *Ṭabaqāt-i-Akbarī,* Lucknow Lith., 236, ll. 14-15.)

Lastly, there is a passage in another work in which Mānkōt and Māngarh are *explicitly* said to be identical. This occurs in the *Tārīkh-i-Dāudī* of a writer named 'Abdulla who says : " Islām Shah stayed some time at Gwālior, and then set about building the fort of Mānkōt. He went thither and caused five forts to be erected ; one of which he named Shergarh, a second Islāmgarh, a third Rashīdgarh, a fourth Firozgarh; the *fifth retained its original names of Mānkōt and Māngarh.*" (Elliot and Dowson, IV, 494.) The *Tārikh-i-Dāudī* was written, it is true, some time after the accession of Jahāngīr, and is, strictly speaking, not a contemporary authority; but it appears from a note at the foot of the page that this particular statement about the five forts, which, it will be remembered, occurs also in Badāonī, "is copied from the *Waqi'āt-i-Mushtākī* (MS. p. 154)," which was itself composed by Shaikh Rizqullāh Mushtāqī who "was born in 897 A.H. and died in 989 A.H., 1492-1581 A.D." (Elliot and Dowson, IV, 534.)

These quotations from contemporaneous historians furnish, I venture to think, just the sort of testimony which is indispensable for establishing the identity of an obscure mint-name, upon which no light is thrown either by our *Gazetteers* or our *Atlases*. They show that Mānkōt was known as Mānghar also in the times of Islām Shāh, and the first years of Akbar's reign, to which last the coins belong. We know that it was the companion stronghold to the Western Rohtās erected by Shēr Shāh, and built with the same object of holding the Ghakkars of the Salt Range in check. It is common knowledge also that it was to Mānkōt that Sikandar Sūr retreated after his defeat at Sarhind, and that the fortress fell only after a siege of little less than six months on 27th Ramaẓān, 964 A.H. (*Ṭabaqāt-i-Akbarī*, in Elliot and Dowson, V, 254-5; Lowe, *Badāonī*, II, 11-12; von Noer, *op. cit.*, I, 77.) Mānkōt does not find a place on our modern maps, but we know from Abūl Faẓl that it was in the sarkār of the Rechnāu Duāb, and that in it were "included 4 towns, each with a stone fort." (*Āin.*, Tr. Jarrett, II, 321) Elsewhere, the same authority informs us that "Selim Khān's real object in building these great forts was that when the standards of H.M. Jahānbānī Jinnat Āshiyāni [Humāyūn] should be directed towards India there might be a refuge for the army of the Panjāb." (*Akbarnāma*, Trans. Beveridge, II, 80). Erskine (*History of India under Bābar and Humāyūn*, II, 467) says that Mānkōt or Mānghar "was on the farthest outskirts of the Siwālik mountains," and "composed of four or five forts on as many eminences, but all connected together." Mānkōt is now no more than a great ruin, situated about 76 miles N. of Amritsar (32° 37′ N., 74°-55′ E.), in the Jammū territory of the state of Kashmīr. It is now known as Rāmkot.

Junāgadh,
8th October, 1916.

S. H. Hodivālā.

(*ix*) [Muḥīābād]-Puna.

Among the rare coins in the Panjāb Museum, there is a Rupee of the 15th regnal year of Shāh Ālam II, which bears, his pre-accession name of گوهر [*sic*] شاه علي on the obverse, and a peculiar ornament (P.M.C., M.no. 94) in the loop of the س of جلوس on the reverse. Mr. Rodgers read the latter half of the mint-name on the coin as پونه Pūna and this decipherment has met with general acceptance; but this name is preceded by another of which only the tail, آباد is visible. An exactly similar coin of the 2nd regnal year, "on which the word گوهر appears in full," is described by Mr. Longworth Dames in Num. Chron., 1902, p. 305, Pl. XIV, no. 68. Two other coins of 'Ali (?) Gohar's with the same mint-mark are also known, but they differ from the foregoing in that, instead of the regnal year, the Musalman date is expressed in Nāgari figures. Dr. Hoernle was the first to publish an issue of this type (J.A.S.B., 1897, p. 273, Plate XXXIV, No. 76), on which the date is १२४३ (1243). Mr. Dames edited another with the figures १२३१ (1231) in the Num. Chron. (1902, p. 308, No. 72), but the double mint-name does not appear in full on either of these specimens. Mr. Dames was able to read تا اباد on his coin, but could not make anything of the letters, and all that Dr. Hoernle was able to say was that his Rupee was, "on native authority, attributed to the Peshwās." Now, all the four coins have a characteristic mark or symbol, of which Prinsep said, so long ago as 1834, that it was found on the "Halee sicca of Poona." (*Useful Tables*, p. 56.) Indeed, it may be safely said that numismatists are now practically agreed in supposing all these coins to have issued from the Pūna mint. That which remains unsettled and awaits solution, is the other name of which only the tail is visible.

I venture to point out that there are in the accredited Musalman histories several passages which enable us to say with confidence that that name is محيآباد Muḥīābād. In the first place Khāfī Khān expressly informs us that Aurangzeb issued in the 47th year of his reign an order to the effect that Pūnā was to be henceforth called Muḥīābād.

بعد این فتح کوچ فرموده یک ماه ایام برشکال در راه پونا و مقامات حوالي قصبهٔ مذکور * * برای آرام لشکر گذرانیدند و آن مکان را بنابر آنکه شاه زاده محمّد محي الملت خلف الصدق بادشاه زاده محمّد کام بخش که از بطن راني منوهر پوري بود و زیاده بر ده سال تمتع زندگاني عارض نیافته باجل طبیعي مرحله پیمای جنّت الماوا گشت و در آن مکان متصل مزار فائض الانوار شیخ صلاح الدین مدفون گشت لهذا بمحي آباد موسوم گردانید *

(Bibl. Ind. Text, Vol. II, p. 510, ll. 12-21.)

"After this conquest [of Sinhgarh or Kondāna] he gave orders to march, and spent one month of the rainy season on the road to Pūnā and the places in the environs of that town for giving rest to the troops. And because the Prince Muḥammad Muḥīu-l-Millat, the eldest son by the Rānī Manoharpuri of the Prince Muḥammad Kāmbak̲h̲sh, who had not tasted the pleasures of this fleeting existence for more than ten years, became a traverser of the road (lit. stages) to Paradise, and was buried in that town near the resplendent shrine [or tomb] of Shaik̲h̲ Ṣalāḥud-dīn, he [i.e. the Emperor] gave it the name of Muḥiābād."

Of this passage, Dowson has given the substance in the following words: "Prince Muhi-ul-Mulk [*sic*] son of Prince Kam Bak̲h̲sh, died here, so the name of Pūnā was changed to Muḥiābād." VII., 373 Note.

The author of the Maāṣir-i-Ālamgīrī also says that after the conquest of the fort of Kondāna, [thereafter called Bak̲h̲shindah-Bak̲h̲sh) in 1114 A H., Aurangzeb 'resolved to bring the rainy season to an end in Muḥīābād—Pūna."

عزم مصمّم بر این قرار یافت که ایام برشکال درمحیی آباد پونا بسر آید *

Bibl. Ind. Text, 475, ll. 2-3.

The same fact is mentioned by the author of the Maāsiru-l-Umarā which was completed in A.H. 1194 (1780 A.C.)

خلد مکان در سال چهل و هفتم بعد تسخیر قلعهٔ کندانه موسوم ببخشنده بخش بارادهٔ انقضای برشکال درمحیی آباد پونا آمد *

(Bibl. Ind. Text, 1, 319, ll. 8-10.)

"In the forty-seventh [regnal] year, K̲h̲uld-Makān [i.e. Aurangzeb] after the conquest of Kondāna, called Bak̲h̲shindah-Bak̲h̲sh, came to Muḥīābād-Pūnā with the intention of terminating the rainy season there."

This reference is not without significance inasmuch as it shows that this writer, who was a resident of the Deccan, and flourished during the reign of Shāh 'Ālam, was familiar with the double name of the town.

Lastly, Grant Duff tells us that "upon the reduction of Rajgarh and Torna, the Emperor, after halting some months near Joonere, finally quitted the neighbourhood of Poona of which place also he had changed the name to Moyabad, and marched to Beejapoor." (Bombay Reprint, 1873, p. 178.)

We may then take it for certain that the Mug̲h̲al name of Pūnā was Muḥīābād, and we should be justified in declaring on the strength of this historical consensus, that the full name of this mint, which has hitherto defied all our efforts at decipherment, was Muḥīābād—Pūna. In other words, we should be on absolutely safe ground in bringing the historical evidence to supply the defect in the Numismatic testimony and relying on the former alone even if the latter did not exist. But I am happy to say that there is at least one coin of the second type on which the name مُحیا اباد can be clearly read. It is one of several others which are not so good, in the cabinet of Mr. Framji J. Thānāwāllā to whom my acknowledgments are due for allowing me to examine them.

The College, Junāgadh,
15th March, 1917.

S. H. HODIVĀLĀ.

(x) PORBANDAR OR PARENDĀ ?

There are probably few earnest students of Mughal numismatics to whom the conjectural and hazardous character of some of our decipherments must not, at times, have been brought home, and I have sometimes ventured to think that the reading 'Porbandar' of a mint-name which occurs on several issues during the reigns of Aurangzeb, Bahādur Shah Shāh 'Ālam I and Farrukhsiyar is not free from serious doubt and difficulty. Indeed, one of the coins attributed by Mr. Whitehead to Porbandar is a muhr of Farrukhsiyar's in the British Museum which was assigned by Mr. Lane Poole to *Bareli* (B.M.C. No. 893, P.M.C. Introd., p. lxiii). A copper coin of the same Emperor on which something like بند only is, at best, but darkly visible, and of which the *nuqṭahs* are almost as gloriously uncertain as the law itself, has been also given to the same mint with a confidence which is scarcely warranted by the indifferent state of preservation in which the coin itself would appear to be (P.M.C. No. 2271a and Num. Sup. XXV, 234). This same tantalising absence of the dots is conspicuous on two other coins which have been ascribed to the same mint, a rupee of Aurangzeb's found in the Bhandārā district of the Central Provinces, and another of Bahādur Shāh Shāh 'Ālam I (H. N. Wright, I.M.C. Nos. 1503 and 1697).

After having thus challenged the verdicts of such experts as Mr. Nelson Wright and Mr. Whitehead, it is incumbent upon me to state the reasons for placing Porbandar in the category, not of the known or 'reasonably certain' mint-towns of the Mughals, but of the conjectural and altogether uncertain ones. In the first place, then, the dots of the third letter are not so unambiguously marked on any known specimen as to make it impossible to read the name in some other way. The same incertitude is further predicable of the final or sixth letter, which does not appear at all on most specimens, and where it happens to be partially visible (as on the Aurangzeb rupee figured in Num. Sup. IV, Pl. II, 10), it would seem to be an 'alif' rather than a 're.' Briefly, two at least out of the six letters are altogether doubtful and impossible to fix.

In the second place, the name of the small Kaṭhiāwaḍ town of Porbandar is always spelt, on the very few occasions on which it is at all alluded to by the Persian historians, as پو، بندر *with* the 'wāv,' which is never dropped. Porbandar is incidentally mentioned once in the *Akbarnāma* of Abūl Faẓl (Bibl. Ind. Text, III, 638. l. 10) and once also in the chapter of the *Āīn-i-Akbari* which is devoted to a description of the Ṣuba of Gujarāt. (Bibl. Ind. Text, I, 500.) The only other Persian work in which the name occurs, to my knowledge, is the history of Gujarāt called the *Mīrāt-i-Aḥmadī*, and the spelling found in *all* these passages is not پر بندر but پور بندر. Again, the second volume of the *Mirāt* contains a valuable statistical account or District Gazetteer, in which the writer expressly mentions all those mints of the Province that are known to us, *viz.* Aḥmadābād, Sūrat, Cambay and Junāgadh. There is not a word, however, in the section on Porbandar about a دار الضرب or mint having ever existed in that town, though several details are given as to the establishments in each of the *other* mints and even the revenue derived from them.

Indeed, it is not easy for any one acquainted with the history of Kaṭhiāwāḍ to understand why Porbandar should have ever been raised to the dignity of a *gold-mint*, at a time when it was a place of only secondary importance even in the very small district occupied by the ancestors of the present Jethvā chief of Porbandar. It was not even their capital, for that was situated at Chhāyā throughout the period to which the coins under discussion belong. The fact is, that it was only in the year 1785 of the Christian era, that the Rānā "Sultānji perceiving that the Mughal power was entirely broken, transferred his seat of rule to Porbandar, which has ever since been the Jethvā capital, and gives a name to the chiefdom" *Bombay Gazetteer*, VIII, 628).

Lastly, this decipherment would make Porbandar a gold-mint in the reign not only of Farrukhsiyar but of Bahādur Shāh Shāh 'Ālam I. (Whitehead, Mint-list, J.A.S.B., 1912, p 467, and Num. Sup. XXV, 237). Now a glance at the list of Mughal mints is sufficient to show that the towns in which the noblest of the metals was allowed to be coined, were all either places of historical renown, famous centres of wealth and industry in their day, capital seats of great subas or provinces, or localities having some political or military importance at the time. I am not sure that a single *undoubted* instance can be cited of a fifth-rate town like Porbandar having been exalted to the dignity of issuing gold coins in two reigns and silver coins in three or four.

It is possible that any one of these arguments taken singly may not possess such force as to ensure the rejection of the Porbandar theory, but it seems to me that their cumulative weight is by no means small, and one can scarcely fail to be impressed by the hazardous character of the decipherment when *all the facts* are taken into account.

Well, then, if Porbandar will not do, is it possible to read the letters in some other way? I submit that it is, and I beg to suggest a name to which no exception can be taken on historical or other grounds, and which satisfies all other conditions besides. This is پرندا Parendā or Purendā, a town in the Os̤manābād district of the State of Ḥaidarābād, situated 18° 16 N., and 75° 27′ E. Parendā is 64 miles N. W. of Naldrug (*Imp. Gazetteer*, XIX, 270) and about 60 miles S.W. of the equally important fortress of Dhārūr (Fatḥābād). Elliot and Dowson, VII, 22n. It contains "a fort erected by Maḥmūd Gāwān, the celebrated Bahmani minister" in the fifteenth century, with several large guns mounted on bastions. (*Imp. Gaz.*, XX, 1). Ferishta informs us that the two great strongholds of Parendā and Sholāpūr were entrusted about 890 A.H. (1485 A.C.) to Khwājah Jahān Dak͟hani by Malik Ḥasan Niz̤āmul-Mulk, the all-powerful minister of Maḥmūd Shāh Bahmani" (Briggs, *Rise of the Mahomedan Power in India*, II, 529. See also pp. 530, 538, 542). The same historian refers to Parendā several times in his account of the factious struggle for power between the nobles in the last days of the Bahmani dynasty. (Briggs, *loc. cit.*, II, 543, 546; III, 16–20, 191, 195, 196, 214). After the extinction of the latter, Parendā was included in the Niz̤āmshāhi kingdom, and it is repeatedly mentioned as a place of considerable strategical importance on the frontier between the rival states of Aḥmadnagar and Bijāpūr. (*Ibid.*, III, 104, 120, 241, 246). Again, when Aḥmadnagar itself was sacked by the Mug͟hals in A.H. 1008 (1599 A.C.), and Bahādur Niz̤āmshāh was despatched by Akbar as a state prisoner to Gwāliar, "the Niz̤āmshāhi officers having declared Moortuza, the son of Aly, King," made Parendā the capital of the kingdom. (*Ibid.*, III, 313). We hear of the fortress again in the reign of Shāh Jahān. It was unsuccessfully besieged in 1040 A.H. (1630 A.C.) by the K͟hān-i-A'az̤am (Elliot and Dowson, VII, 22-4), and again invested with the like result by the Prince Shujā'a and the K͟hān-i-K͟hānān Mahābat K͟hān in 1043 A.H., *i.e.* 1634 A.C. (Elliot and Dowson, VII, 43-44; Grant Duff, *History of the Marāthās*, Bombay Reprint, 1873, p. 49). A little later, we hear that one of the terms of the treaty made between "Shāh Jahān and 'Ādil K͟hān of Bijāpūr in 1045 A.H. (1635 A.C.) was that the fortress of Parendā which had formerly belonged to Niẓām-ul-mulk, but which had been surrendered to 'Ādil Khān for a bribe," should be allowed to remain in the possession of the latter. (E.D. VII, 57; Grant Duff, 50, 52). At last, it came into the hands of the Mughals in the third year of Aurangzeb (1071 A.H.), when the Amīru-l-Umarā, Shāyasta Khān "reported that the fort of Parendā had been won without fighting." (Māāṣir-i-'Ālamgiri, text p. 33; E.D. VII, 263). It remained in the hands of the Mughals during the rest of Aurangzeb's reign, and Khāfi Khān informs us that Kām Bakhsh was "encamped at 'Parendā forty or fifty kos distant' from Aḥmadnagar," when he heard of the death of his father (Bibl. Ind. Text, II, 5[illegible]9; E.D. VII, 389).

Coming down to later times, it is clear from the pages of Grant Duff that it was an important military station even in 1774 A.C. It was at 'Purinda' that Trimback Rāo Mīmī and Sabāji Bhonslay were encamped in that year, and from which they marched against Raghūnāth Rāo (Reprint, 1873, p. 367). Twenty-one years later, the decisive battle of Khardī or Khardlā was brought on while the Niẓām's army was marching from Khardī to Purindā (*Ibid.*, 515-6). Lastly, Colonel Stevenson was, on the outbreak of the Second Mahrātta War (1803 A.C.), ordered to take up his position with the Ḥaidarābād subsidiary force and 15,000 of the Niẓām's own troops at Purinda, on account of its vicinity to the "Peshwā's eastern frontier." (*Ibid.*, 568; see also Mill and Wilson, *History of India*, Ed 1858, VI, 292).

The name of Parendā or Purendī is not now so familiar as that of Porbandar, and the former is at present only a town in ruin, to which not more than a dozen lines are devoted in the *Imperial Gazetteer*. Parendā has fallen while Porbandar has risen, but there can be no doubt that during the sixteenth and seventeenth centuries and the first quarter of the eighteenth, *to which last period* all the coins under consideration belong, Parendā continued to be what Porbandar never was, and perhaps never can be, a place of great political and military importance, and much the most likely of the two to have possessed a gold mint.

It is of course true that the name cannot be read with certainty on any of the half-dozen coins hitherto discovered, but then the reading Porbandar is, besides being at least equally uncertain, open to *other* serious objections. Under the circumstances, I crave permission to put in a caveat against Porbandar, and submit that the claims of Parendā are at least equally worthy of consideration. I do not therefore think it too much to ask that judgment should be reserved until the discovery of less ambiguous specimens.

The College, Junāgaḍh, S. H. Hodivālā.
15th February, 1917.

P.S.—I have said that on the Aurangzeb rupee figured in Num. Sup. IV, the final letter looks more like an *alif* than a *re.* I would invite attention to Rodgers' Copper Coin (J.A.S.B., 1895, Pl. XVIII, No. 80), in which also the final letter is clearly an *alif*, if the drawing can be relied upon. It is perhaps not unworthy of note that it is of the 4th year of Farrukhsiyar (B.M.C. 893 is of the 5th), and that Rodgers' own decipherment, so far as it went, was بلدا.

S. H. H.

197. NOVELTIES IN PARTHIAN COINS.

Parthian numismatics have been made the subject of study by some well-known numismatists since the celebrated Vaillant (died in 1706), whose work on this subject was published posthumously in 1725. His attributions were greatly improved upon by subsequent scholars, whose meritorious investigations paved the way for recent works by Longpérier (Mémoires sur la chronologie et l'iconographie des rois parthes Arsacides, Paris, 1853; the 18 engraved plates were not published until 1882); Prokesch-Osten (Les monnaies des rois Parthes, Paris, 1874–75, with 6 plates); Gardner (The Parthian Coinage, London, 1877, with 8 plates); and Wroth (Catalogue of the Coins of Parthia in the British Museum, London, 1903, with 37 plates). Over and above these four works now most commonly consulted, mention must be made of the important paper (Coins of the Arsacidae; text in Russian) on unpublished and noteworthy coins by De Markoff which appeared in the *Journal of the Russian Oriental Society, St. Petersburg*, 1892. Drouin has given a very able summary and review of this paper in the *Revue Numismatique, part I*, 1893. Rapson (Numismatic Chronicle, 1893, pp. 203-219) has also reviewed it but from points of view other than those already occupied by Drouin. Prokesch-Osten's book describes the coins in his own fine collection, now in the Berlin Museum.

The coinage of the Parthian rule forms a very extensive series spreading over a period of nearly four hundred and seventy-five years from about B.C. 250 to about A.C. 227. The decisive engagement with Ardavān (Artabanus) in which the last Parthian monarch fell, and where Ardeshīr I gained the title of "king of kings," seems to have been on 28th April (A.C. 224, according to Nöldeke, or A.C. 227, according to Gutschmid), and was probably fought in Babylonia or Susiana. The drachmes (see B.M. Catalogue, *op. cit.*, pl. xxxvi, figs. 14 and 15) assigned to Artavasdes, perhaps a son of Artabanus, furnish the evidence of the remnant of Parthian royalty after the final overthrow by Ardashīr I, the founder of the Sāsānian empire.

The coinage consists of silver and bronze pieces. There are no gold coins. The denominations in silver are :—tetradrachme, drachme, triobol, diobol and obol. The last three are very scarce and do not seem to have been minted after Orodes I (B C. 57–37). The denomination or normal value of the bronze pieces are not known.

Wroth has come to the conclusion that some modifications must be made in the accepted arrangement of the coins as set forth in Gardner's work. The rectifications that seemed necessary are principally in the period before Phraates IV (B.C. 38/7–3/2) and in a paper "On the Re-arrangement of Parthian Coinage" published in the *Numismatic Chronicle for* 1900 (pp. 181–202) he has criticized the existing arrangement. He has indicated an alternative scheme which with various modifications and corrections, has been adopted in the British Museum Catalogue. The arrangement of Parthian coins presents exceptional difficulties; the principal being the absence of the names of most of the kings on coins. It has not yet been possible to compile with certainty the list of Parthian kings and to determine with precision the limits of their reigns. It must not be assumed that the kings followed one another in natural sequence, because we have to make allowances for the possibility of contemporaneous reigns as well as the rise of usurpers and rival rulers. The dated coins bear testimony to these facts vaguely hinted at by the historians.

The obverse almost always represents the king turned to the left, save some exceptions with the head of the king to right. There is usually but a slight difference between the portraits of a king in the early years of his reign and those executed in his later years. The reverse of the drachme and lesser denominations bears, with some rare exceptions, the familiar figure of the seated bowman. This type continues constant, with some exceptions, on the reverse of the tetradrachme also till the reign of Orodes I (B.C. 57–37), when is inaugurated a new type having the reigning king, either on his throne or on horseback, usually in the act of receiving a palm or wreath from a female figure representing the mint city itself. The reverse types of the bronze coins are extremely varied.

The earlier types exhibit higher artistic merit and the inscriptions are written with far greater clearness and correctness. After the reign of Phraates IV (B.C. 38/37–3/2), the letters become more crude and from the reign of Gotarzes (A.C. 40/41–51), the legends on drachmes are quite debased and unintelligible. From this time all legends disappear from the ordinary bronze coins; but the tetradrachmes and the pieces of bronze which bear the head or figure of a city can be read to the last.

The rude conquerors, having no civilization of their own, nor even a language at all suited to the intricacies of civilized life, adopted the Greek language and culture which they found already introduced. The Greek epithets and titles assumed by Parthian kings are varied. In the variety of the legends, particularly in their increasing length and the number of titles they comprise, we find the key to the arrangement of the coins before Phraates IV. The name of the first king is given simply as ΑΡΣΑΚΟΥ, the second styles himself ΒΑΣΙΛΕΩΣ ΑΡΣΑΚΟΥ, the third adopts the style of ΒΑΣΙΛΕΩΣ ΜΕΓΑΛΟΥ ΑΡΣΑΚΟΥ and so on the titles increase till the full royal style is fixed. The drachmes of Phraates IV (see the one described below) present what may be called the stereotyped Parthian legend, for it is seen on nearly all the succeeding coinages. Some of the later drachmes bear a legend in Pahlavī. The first two letters of his name in this language occur on the coins of Volagases I (A.C. 52–77/78). and from Mithradates IV (A.C. ? 130-147) the names of the kings in full appear with the title *malkā* "king." This and the barbarous legends indicate that the Greek tongue was no longer understood by the people.

With the meritorious investigations embodied by Gardner and Wroth in their respective works it has now been possible to assign coins with tolerable certainty in spite of most of the rulers having not recorded their names on their coins.

The drachmes of several kings subsequent to Sinatruces (B.C. 77–70) are marked by numerous monograms and letters, the number of varieties being greatest under Orodes I (B.C. 57–37). Chabouillet (Revue Numismatique, 1867, p. 392) says that there are but few cities, such as Odessus, Patrœ and Panormus, which are known to have placed on their coins a monogram to represent their names and that in these cases the monogram was a sort of recognised symbol or arms of the town and not a mere invention of the die-sinker. He contends that these monograms are usually merely the private mark of a magistrate or contractor and were not intended to be decipherable to any one except himself.

De Markoff (Monnaies des rois Parthes, Paris, 1877, part 2, p. 41 and plate) has compiled a table of 112 different monograms and letters and also a list containing the names of about the same number of towns which he supposes the monograms and letters to indicate. His identifications are mostly hypothetical, as most monograms can be read in more ways than one. For example, the monogram on the drachme of Phraates IV described below may be read TA, AT and TAT.

Gardner (The Parthian Coinage, p. 23 sq.) says, "To suppose that a monogram in the field of a coin usually represents the name of the mint whence it was issued, is to go altogether beyond the evidence. But even if they did contain the names of cities, it would be quite hopeless to attempt to read them, a monogram being a thing by nature most obscure and ambiguous. It can nearly always be read in three or four ways, and may often by means of a little ingenuity, be made to represent anything the interpreter chooses."

From the appearance of several monograms for a long period it is certain that they cannot be the private marks or personal names of magistrates. The only possible view is to suppose that they indicate, in some may or other, the mint-place of the coins.

The Catalogue of the Coins of Parthia in the British Museum (Wroth, 1903) still occupies its leading position as the standard work on this branch of numismatic research. There are many gaps to be filled, for not only are the issues of some Parthian rulers still unrepresented in known cabinets, but specimens have yet to be discovered of types which by analogy can reasonably be expected to exist.

With these preliminary remarks I here introduce to the notice of students of this epoch a drachme of Phraates IV which, so far as I know, is unpublished.

A Drachme of Phraates IV without Adjuncts.

The parricide and fratricide Parthian king Phraates IV, who reigned from B C. 38/37 to 3/2, was the eldest of the thirty surviving sons of Orodes I (B.C. 57-37). He was an able but unscrupulous ruler and began his reign by murdering all his brothers. The struggle with Rome was renewed and Antony, after the unsuccessful siege of Phraaspa, the capital city of the Parthian dependency of Media, had to retreat to the Armenian frontier with heavy loss in B.C. 36. This failure brought peace to Parthia His long reign was not without internal dissensions and it appears that his throne was also usurped for some time by Tiridates. Phraates, who had murdered his father Orodes, as Orodes had murdered his (Phraates III, B.C. 70–57), met his own end by parricide.

His drachmes and bronze coins are classified in types, according to the adjuncts on the obverse :—

A. Eagle behind with wreath in beak crowning king's head.
B. Eagle as above and star in front.
C. Eagle as above and crescent in front.
D. Eagle as above and star within crescent in front.
E. Eagle as above with star and star within crescent in front.
F. Star below crescent in front.
G. Star below crescent behind and star in front.
H. Star in front.
I. Nike flying behind wreathing king's head.

J. Nike as above and star within crescent in front.
K. Without adjuncts.

No drachmes are published so far as I know of the types F, G, H and K; but they by analogy can reasonably be expected to exist. The drachme described below is of the type K without adjuncts. The grènetis round about the head of the king is so struck that it precludes the possibility of having any of the adjuncts off the flan.

Description of the Drachme.

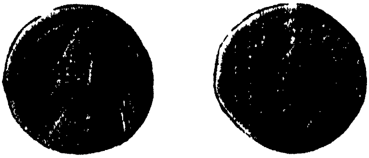
Metal —Silver. *Size.*—·75 inch. *Weight.*—59 grains.

Obv.—The bust of king to left with diadem having fillets floating behind. The hair arranged in formal rows, a wart on left temple, a moustache, and a pointed beard. The bust clothed in dress and a linked necklace with cuirass in front. Grènetis.

Rev.—Arsaces seated to right on throne, holding bow. In front, the mint-monogram Ѧ.

Legend.—Above ΒΑΣΙΛΕΩΣ | ΒΑΣΙΛΕΩΝ, right ΑΡΣΑΚΟV; in exergue ΕVΕΡΓΕΤΟV | ΔΙΚΑΙΟV, left ΕΠΙΦΑΝΟVΣ | (Φ)ΙΛΕΛΛΗΝΟ(Σ).

Translation.—The King of kings, Arsaces, the benefactor, the just, the (divine) manifestation, the friend of Greece.



The mintmonogram Ѧ appears not only on the drachmes of the reigns from Phraates II to Phraates IV, but also on the bronze money, being the only monogram found on the coins of this metal. Under Phraataces (B.C. 3/2 to A.C. 4) it is found in the form Ѧ and from this reign till the fall of the Arsacid empire, is always found on the drachmes. From the time of Vologases I (A.C. 51–77) hardly any other monogram occurs.

Gardner (*op. cit.*, p. 24) emphatically says "Ѧ does certainly stand for a city, for it is found in connection with the word ΠΟΛΙΣ."

Perhaps he may be correct, but not for the reason that this monogram is found on a bronze coin joined with a city type and this word. In reality it is not this monogram but Ѧ that is found in connection with this word, as could be seen from his work (p. 59, no. 22).

Wroth (B.M. Catalogue, *op. cit.*, p. lxxxvii) says, "From the time of Vardanes I onwards Ā is almost the only monogram that appears on the coins. Except in the case of barbarous specimens. Ctesiphon may be regarded as the most likely mint-place of the later Parthian money." Vardanes I reigned from A.C. 41/42–45.

This attribution seems to me to be doubtful. How can we be certain that this is the sole monogram on the coins of all kings who reigned contemporaneously from A.C. 77-78 to 148-9 in different parts of Parthia? The dated tetradrachmes and bronze coins bear testimony to the existence of such rulers during this period. Could it be assumed, then, that this monogram latterly lost its significance and was taken as a necessary appendage to the design by ignorant die-sinkers?

A Drachme of Mithradates IV with the Symbol ♀.

Longpérier (*op. cit.*, p. 139 sq) and Gutschmid (Geschichte Irans, p. 144) identify this ruler with the Meherdotes who is described by John Malala as "King of Persia," a Parthian by race and brother of Osroes. Wroth (*op. cit.*, p. lix) considers the account of Malala as legendary and believes this identification unsatisfactory both on historical and numismatic grounds.

Our knowledge of this king is derived from coins bearing his name in Pahlavī and his portrait, which also appears on coins devoid of any Pahlavī legend, but clearly issued by the same ruler. The style and epigraphy of his coins clearly indicate that a king named Mithradates was ruling approximately from A.C. 130 to 147.

His drachmes can be divided:—

A. Barbarous Greek legend.
B. More barbarous Greek legend.
C. Very barbarous Greek legend with the addition of the Pahlavī legend *Mitradata malkā.*

I here bring to the notice of students of this epoch a drachme belonging to one of the three known types of this king. It may be designated as a variety of type B and is peculiar in bearing on the reverse the symbol ♀. Only two such drachmes are known (see Sammlung Petrowicz. Arsaciden Wien, 1904, p. 154, no. 4). A similar drachme is attributed wrongly to Volagases IV by Longpérier (*op. cit.*, pl XVII) This symbol occurs only on the bronze coins of Phraates IV, Volagases I (A.C 51–77/78) and Volagases III (A.C. 147/48–191). For these coins, see B.M. Catalogue, pl. xxiii, fig. 5; pl. xxix, fig. 13; and pl. xxxv, fig. 3 respectively.) Gardner (*op. cit.*, p. 55) mentions a bronze coin of Mithradates IV with this symbol in the cabinet of Prokesch-Osten, which is now in the Berlin Museum.

Thomas (Early Sassanian Inscriptions, London, 1868, p. 126) conceives this symbol to have been the mere conventional representation of the Sun, based upon ancient models, the worship of which was largely affected by the Arsacids.

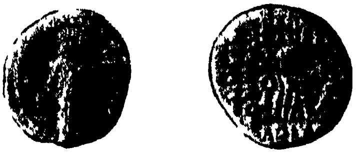
Description of the Drachme.

Metal.—Silver. *Size.*—·65 inch. *Weight.*—48 grains.

Obv.—The bust of Mithradates IV to left with diadem having fillets floating behind. Flowing hair, a moustache, a long pointed beard, dress and a spiral necklace. Grènetis.

Rev.—Arsaces seated to right on throne, holding bow. In front, the mint-monogram Ā; and behind, the symbol ♀.

Barbarous legend, obviously in imitation of that given above.



FURDOONJEE D. J. PARUCK.

26th October, 1917.

10. Preliminary Note on the Flora of the Anaimalais

By C. FISCHER, *Indian Forest Service*

(Read at the Indian Science Congress, Jan 1918).

The Anaimalai Hills form the northern mass of a vast stretch of mountain region that occupies a considerable portion of the Travancore and Cochin States and parts of the Madura and Coimbatore Districts in British territory. An offshoot runs southwards to the neighbourhood of Cape Comorin.

The range we are here concerned with falls within the limits of the Coimbatore District. It lies on the border land between Travancore, Cochin and Coimbatore, distinctly nearer the west than the east coast of the Peninsula, and covers a length of about 33 miles from west to east, with a maximum breadth, north to south, of 17 miles.

The range is not everywhere very clearly separated from the Travancore Hills to the south. On the west and east it is cut off from the Neliampatti and Palni hill ranges respectively by the Tekkadi and Amaravati rivers. Its northern limit is formed by steep slopes descending to the plains of Coimbatore.

The elevations along the foot of the hills vary from about 900 feet above mean sea level, where the Amaravati river leaves them on the east, to about 1,200 feet on the west. The highest peak, Tanakumalai, more or less centrally situated, rises to nearly 8,300 feet. From this central mass, where there are a number of prominences over 7,000 feet high, the hills fall away east and west to the valleys of the two rivers mentioned, while southwards, after falling to about 6,500 feet near the Travancore border, the land rises again to culminate at Anaimudi, 8,800 feet, the highest point in Southern India.

The whole tract forms a very wild and rugged region, the greater part of which is totally uninhabited and trackless. The persevering pioneer is rewarded by grandiose aspects of hill, torrent and forest and, at the higher levels, by an invigorating atmosphere. Parts are still practically unknown and have been penetrated only by the jungle-men and a few prospecting or sporting planters and forest officers.

The first visit of a European of which we have any record was made by Captain (afterwards General) J. Michael, the first Forest Officer in the Madras Presidency, if not in India, in 1851. He made two or three trips to the higher range and a high level valley commemorates his name. Captain Douglas Hamilton, another Forest Officer drawn from the then Madras Native Infantry, also explored these hills in the sixties of the last century. Lt. (later Col.) Beddome and Dr. Cleghorn, both Forest Officers, made excursions; their reports, as well as some sketches of the scenery and the aborigines made by Hamilton, are to be found in Cleghorn's "Forests and Gardens of Southern India."

The first plantations for coffee were started on the northern slopes about the middle of the last century, but the best planting region, which is now the thriving Anaimalai Planting District and which has bitten so deeply into the splendid evergreen forests of the south-western aspects, was opened about 1896 by one or two adventurous pioneers who have reaped a rich and deserved harvest as a result of their enterprise.

As the name of the range indicates to those who know Tamil, the Anaimalais (literally Elephant Hills) are one of the South Indian strongholds of elephants. These beasts are often a serious menace to planters and others in the tract, not only to property but to life Apart from the capturing operations by the pit method carried out by the Forest Department in the extreme western corner these animals roam the length and breadth of the hills practically unmolested

The Indian bison or gaur is common, both in the lower moist forests and on the grassy downs of the heights, where it grazes almost side by side with large herds of the Nilgiri goat—*Hemitragus hylocrius* Tigers are not very common, the tract as a whole not being very well suited to their habits. The panther is more frequent and black specimens are not uncommon Other animals of interest to the sportsman are the sloth bear. wild dog, often met with in very large packs, sambar, spotted deer, mouse-deer and wild pig. Small game is not at all abundant.

Among snakes of special interest, I may mention the hamadryad (*Naia bungarus*) a specimen of which, 11½ feet long, was killed within a stone's throw and, incidentally, by a thrown stone, of my camp at Attakatti. At the same place I killed a keeled viper (*Echis carinata*). The fauna as a whole is as varied and as interesting as the flora and as little investigated, so that this tract should prove a rich field for all departments of Zoology.

Four indigenous races of jungle-men reside in these hills. These are the Kadirs, Malasas, Muduvas, and Pulaiyas. The Kadirs are a primitive tribe without fixed location and with practically no cultivation. They construct temporary habitations shifting with the seasons, but confine themselves almost entirely to the evergreen forest region. Their rainy season huts are complete and fairly watertight, though constructed of bamboo and thatched with grass or the leaves of the reed-bamboo, while the fair weather shelter is a mere lean-to, formed by a thatched oblong frame of bamboo inclined against two bamboo posts and quite open on three sides. These people live mainly on wild roots and fruit, honey, grubs, etc., and, to a certain extent, on food-stuffs obtained from the plains by barter for jungle products, but at a pinch they are quite self-supporting. They are much addicted to opium eating.

The Malasas are a larger and wider spread tribe, much more in contact with the population of the plains and often living alongside of plains villages, where they are employed on field labour.

The Pulaiyas and the Muduvas dwell exclusively in the central and eastern portions of the hills. The latter are said to descend from plains people who took refuge in the hills from the aggression of Tippo Sultan's Muhammadan invaders. They rate themselves as the aristocracy of the hills and are acknowledged as superior by the other tribes and, indeed, occupy the same relative status among them that the Brahmins do among the Hindus. They eat flesh but respect that of the bison, as being of the nature of a cow a respect in which the Kadirs also share. Neither will touch or even approach a dead bison though they will assist a sportsman in stalking and shooting these fine beasts. The Pulaiyas, on the other hand, show no such scruple and the vicinity of a bison carcase is a repulsive spectacle after these people have got at it.

The only cultivation of the Kadirs is an occasional patch of *Eleusine coracana Gaertn.* in small clearings along the streams. The other races cultivate *Andropogon Sorghum Brot.*, *Eleusine coracana Gaertn.* and *Amaranthus paniculatus Linn.* The Muduvas and Pulaiyas also grow *Ipomaea Batatas Poir*, to a considerable extent, irrigating the fields by channels from the streams. It has been stated that "ganja" (*Cannabis sativa Linn.*) is grown in places in spite of legal prohibition, but I have never seen any sign of it, nor have the excise officers ever obtained confirmation of the rumour.

The earliest records of botanical investigation in the Anaimalais are found in the reports of Captain Michael, Lt. Beddome and Dr. Cleghorn, which have already been referred to. These accounts of their visits, however, were inspired rather by the zeal of pioneer foresters than of botanical investigators, and the information from the latter point of view is scanty and indefinite. Beddome was in charge of these forests and though no separate work on the area is forthcoming his observations are to be found in his "Flora sylvatica," "Ferns of Southern India" and "Ferns of British India."

I have not been able to ascertain whether Dr. Robert Wight, who was stationed for a considerable time in Coimbatore, ever visited the Anaimalais, but it would seem that he did not, since the region is not referred to in his and Arnott's

"Prodromus"; the hills mentioned in that work belong to a quite different range.

Dr. C. A. Barber, as Botanist to the Government of Madras, paid two or three visits to the Anaimalais and field collectors of that office have been deputed to collect there. By the courtesy of Rai Bahadur K. Ranga Chariar and his assistants I have been furnished with a list of the plants collected and noted during these trips.

My own acquaintance with these hills covers a period of about five years from the end of 1911, during which time my official duties took me into these hills for at least one half of each year. Unfortunately, the exigencies of forest work demanded my presence in definite localities at the same periods each year, so that my collections and notes are deficient in consequence. This has affected my record of the most interesting and fruitful localities, that is to say, the dense evergreen forests and the grass lands of the mountain tops, which I was able to probe only during the hot weather months.

Considered as a whole, the flora of the range partakes both of the Malabar and the Dekkan regions as described in Sir Joseph Hooker's "Sketch of the Flora of British India." The Malabar region is represented in the evergreen forests and their neighbourhood in the zones of heavy rainfall The Coromandel sub-region of the Dekkan region is found in the comparatively low-lying tract near the Amaravati river; and the Mysore sub-region on the outer, fairly dry slopes up to about 1,500 feet, especially towards the east

The vegetation falls naturally into five fairly distinct types, though they are intermingled to a certain extent and merge so that no very clear limits can be assigned to each.

Starting from the plains we get successively :—

I. *The dry semi-desert type* which occupies the lower Amaravati valley and extends westwards more or less along the foot of the hills. The elevations run from about 900 to 1.500 feet and the rainfall ranges from 18 to 21 inches.

As might be expected, thorny plants figure prominently: such as *Commiphora Berryi Engl.*, *Dichrostachys cinerea W. & A.*, *Acacia Latronum Willd.* (generally very gregarious), a sprinkling of *Acacia planifrons W. & A.*, *Opuntia Dillenii Haw.*, *Coffea Wightiana W. & A.*, *Dicoma tomentosa Cass.*, *Azima tetracantha Lam* *Solanum trilobatum Linn.*, *Euphorbia antiquorum Linn* , and *tortilis Rottl.* Other characteristic plants are *Euphorbia dracunculoides Lam* , and *Jatropha Wightiana Muell.-Arg.* and among grasses *Perotis latifolia Ait.* and *Oropetium Thomaeum Trin.*

Along the large streams species of other types are apt to intrude as *Terminalia Arjuna W. & A.*, *Vitex leucoxylon Linn. f.*, *Albizzia procera Benth.*, *Hopea parviflora Bedd.*, *Calophyllum Wightianum Wall.* and *Calamus pseudotenuis Becc.*

II. *The dry deciduous hill type* is found on the outer slopes from 1,500 to 3,500 feet with a rainfall of from 20 to 60 inches. The slopes are generally very rocky and precipitous.

The characteristic species here are *Cochlospermum Gossypium D.C.*, *Shorea Talura Roxb.*, *Sterculia urens Roxb*, *Eriolaena quinquelocularis Wight*, *Buettneria herbacea Roxb.*, *Plectronia didyma Gaertn.*, *Diospyros montana Roxb.*, *Didymocarpus Rottleriana Wall.*, *Givotia rottleriformis Griff.*

III *The moist deciduous forest type*, mainly situated in the western extremity, though it occurs also in patches here and there in favourable localities. It ranges between elevations of 1,500 and 2,500 feet with a rainfall of from 50 to 100 inches and merges into the evergreen type. This is the most important type in the estimation of the forest officer, for it is here that the finest timber trees are found and where they attain their greatest development. Here we find enormous stems of *Tectona grandis Linn.*, *Dalbergia latifolia Roxb* *Terminalia tomentosa Bedd.*, *Anogeissus latifolia Wall.*, *Pterocarpus Marsupium Roxb.*, *Lagerstroemia lanceolata Wall.*, and several others.

Apart from these giant trees two other features distinguish this type : the luxuriant growth of *Bambusa arundinacea Willd.*, which tends to take possession of the soil to the exclusion of all other vegetation, and the presence of *Lantana Camara Linn.*, which rapidly overgrows open spaces.

Other noteworthy species are *Dillenia pentagyna Roxb.*, *Naregamia alata W. & A.*, *Vitis discolor Dalz*, *Crotolaria dubia Grah*, several species of *Desmodium*, *Spatholobus Roxburghii Benth.* *Careya arborea Roxb.*, *Antidesma Ghaesembila Gaertn*, *Cycas circinalis Linn.*, a number of *Scitaminaceæ*, including *Zinziber officinalis Rosc.* and *Clinogyne virgata Benth.*, which forms dense thickets near water. The fern *Drynaria quercifolia Linn.* is common on tree trunks and on rocks.

The depressions are often swampy and there one finds *Randia uliginosa D.C.*, *Sphenoclea zeylanica Gaertn.*, *Hydrolea zeylanica Vahl.*, and *Ceratopteris thalictroides Linn.* Along streams *Rhabdia lycioides Mast.* occurs.

IV. *The evergreen type*, which is divisible into three subtypes corresponding roughly with the elevation, and where a rainfall of from 100 to 150 inches prevails.

(*a*) *The low evergreen sub-type* lies between 1,500 and 3,000 feet. Some of its characteristic species are :—

Hydnocarpus Wightiana Bl., *Xanthophyllum flavescens Roxb.*, *Geophila reniformis Don*, *Bragantia Wallichii Br.*, *Croton candatus Giesel.* *Dimorphocalyx Lawianus Hook. f.*, *Excaecaria robusta Hook f.*, and the reed-like bamboo *Ochlandra travancarica Benth.*, which densely covers large areas along streams. It is the leaves of this species that are generally used for thatching.

(*b*) *The median evergreen sub-type* from 3,000 to 5,000 feet. This is the zone most suited for the purposes of the planting industry and several thousand acres have been cleared for coffee, tea and cardamoms. Rubber trees of several kinds have been tried, but this cultivation has not proved as profitable as that of the other products named. Pepper vines are also grown to a small extent on the shade trees in the plantations.

Gigantic evergreen trees grow in these forests, some, such as *Mesua ferrea Linn.*, *Calophyllum tomentosum Wight*, *Palaquium ellipticum Engl.*, and *Diospyros Ebenum Koen.*, are of value to the timber trade. This is probably the most varied and botanically interesting of all the types and covers a very large expanse. The vegetation is exceedingly dense and it is possible to walk for miles in unclouded day light without being able to catch a glimpse of the sun, so much so that surveyors working here have to dispense with sun readings.

There are four well defined stories of vegetation: tall trees, with their crowns out in the sunlight, overtop all; besides those already named may be mentioned *Cullenia excelsa Wight*, *Elæocarpus tuberculatus Roxb.*, *Canarium Strictum Roxb.*, *Kurrimia bipartita Law.* and several species of *Myristica*.

Beneath these, smaller trees adapt themselves to the more shady conditions and form a lower story consisting, among very many more, of *Unona pannosa Dalz.*, *Goniothalamus Wightii Hook, f. & T.*, several *Garcinias*, *Holigarna Beddomei Hook, f.*, *Eugenia Munronii Wight*, *Premna coriacea Clarke*, *Agrostistachys longifolia Benth.* and *Macaranga tomentosa Wight*. The latter with *Clerodendron infortunatum Linn.* being the first tree-growth to appear as secondary growth on cleared areas left to themselves.

Innumerable woody shrubs form the next stage, such as *Paramignya armata Oliv.*, *Turraea villosa Benn.*, *Psychotria anamallayana Bedd.*, *Saprosma indicum Dalz.*, *Ervatamia coronaria Stapf*, several *Strobilanthes* which are often overgrown by *Cassytha filiformis Linn.*, and *Elettaria cardamomum Maton.*

Finally, below all, there is a carpet of herbs, and cryptogams like *Neurocalyx Wightii Arn.*, *Acranthera anamallica Bedd.*, *Pellionia Heyneana Wedd.* *Gymnopteris contaminans Wall.* and *Selaginella plumosa Baker*. Orchids and ferns cluster on the trunks, mosses clothe them and lichens disguise them; an occasional *Fagraea ovata Wall.* or *Connarus Wightii Hook, f.*, is festooned among the branches.

Where the soil is poor the trees of the tallest story are either absent or reduced in size and there are then only three stories; here the tree composite, *Vernonia monosis Benth.*, appears.

Some further features of interest in this sub-type are the tree ferns (species of *Alsophila*). the *Podostemoniaceae* on semi-submerged rocks in stream beds, the occurrence of the justly-dreaded "elephant-nettle," *Laportea crenulata Gaud.*, and of the only South Indian conifer *Podocarpus latifolia Wall.*, though this latter is rare in the tract.

(*c*) *The high evergreen sub-type* above 5,000 feet. This type occurs both in continuous expanses of forest and in isolated patches punctuating the open grass lands of the next type. usually aggregating in and around depressions which form the sources of streams

Here we find *Michelia nilagirica Zenk.*, *Mahonia Leschenaultii Tak.*, *Eurya japonica Thunb* , *Elæocarpus ferrugineus Wight*, three species of *Ilex*, three species of *Microtropis*, *Turpinia pomifera D.C.*, three species of *Rubus* (mainly in open glades and along the borders), *Rhodomyrtus tomentosa Wight*. *Eugenia calophyllifolia Wight*, *Senecio Carymbosa Wall.*, *Gaultheria fragrantissima Wall.*, *Rhododendron arboreum Sm.*, *Ardisia rhomboidea Wight.*. *Symplocos anamallayana Bedd.*, *Cinamomum Wightii Meissn.*. *Cirrhopetatum Gamblei Hook, f.*

The curious epiphyte *Impatiens Jerdoniæ Wight* is common at the higher elevations, as also the small parasite *Viscum japonicum Thunb.*, especially on *Eurya japonicum* and *Rhododendron arboreum.*

V. *The grass land type* from 3,500 feet to the highest summits. Here again a sub-division according to elevation is required. The limits between the sub-types is not well defined, but can be fixed with rough approximation at 6,000 feet. The type consists of open grass lands; the lower sub-type is often dotted with single trees or small groups, such as *Terminalia Chebula Retz*, *Zizyphus rugosa Lam.*, *Mallotus albus Muell.-Arg.*, while the higher sub-type is invaded by the patches of the high level sub-type of the evergreen type. The slopes are usually steep except where small plateaus occur. when the ground undulates more or less gently to the edge of precipices or passes more gradually into the steeper, lower slopes.

(*a*) *The lower grass-land sub-type* below 6,000 feet presents such species as *Berberis tinctoria Lesch.*, three species of *Viola*, *Crotolaria Wightiana Br.*, *Desmodium rufescens D.C.*, *Drosera Burmannii Vahl*, *Lobelia nicotianaefolia Heyne*, *Swertia affinis Clarke*, *Æginetia pedunculata Wall.*, *Osyris arborea Wall.*, three species of *Burmannia*, *Phoenix humilis Royle*, *Eriocaulon odoratum Dalz.*, *Ischaemum ciliare Retz*, *Andropogon Nardus Linn.*, *Pteris aquilina Linn.*, *Lycopodium cernuum Linn.*, and *Selaginella rupestris Spreng.* on rocks

(*b*) *The high grass-land sub-type* above 6,000 feet offers a number of species of an alpine affinity and generally resembles the flora of at the same elevations in the Nilgiri and Palni Hills. The species met with chiefly are *Hypericum japonicum Thunb.*, *Geranium nepalense Sweet*, *Fragaria indica And.*, *Osbeckia Leschenaultii D.C.* *Peucedanum anamallayanum C. B*

Clarke, *Hedyotis articularis Br.*, and *buxifolia Bedd.*, *Dipsacus Leschenaultii Coult.*, *Vernonia Bourneana W. W. Smith*, *Anaphalis araneosa D.C.*, *Cnicus Wallichii D.C.*, *Lysimachia Leschenaultii Duby*, *Pedicularis zeylanica Benth.*, *Strobilanthes Kunthianus T. And.*, *Plantago major Linn.*, *Rumex nepalensis Spreng.*, *Thesium Wightianum Wall.*. *Lilivm neilgherrense Wight*, *Isachne Gardneri Benth.*, *Arundinella Wightiana Nees.*

In swampy places occur *Ranunculus reniformis Wall.* and *Wallichianus W. & A.*, *Drosera peltata Sm.*, *Serpicula indica Thw.*, *Gentiana quadrifaria Bl.*. several *Utricularias*, *Satyrium nepalense Don.*, several species of *Eriocaulon*. *Carex phacota Spreng.*, and *Athyrium Filix-fœmina Bernh.* Along streams are *Anemone rivularis Ham.*, *Impatiens Tangachee Bedd.* (named after a prominent peak of these hills), the beautiful *Sonerila grandiflora Wall.*, and *Exacum atropurpureum Bedd.*, var. *anamallayanum Bedd.*, also *Arundinaria Wightiana Nees* and *Osmunda regalis Linn.*

It will be seen, therefore, that the flora of this range is very varied but, on the whole, does not differ very widely from that of adjoining areas As far as present investigation extends the chief points of difference that present themselves are the following :—

The absence from the semi-desert type of the spinous *Dalbergias* and of *Cassia marginata Roxb.*, which are common in the Madura District.

In the evergreen forests one expects the *Anacardiaceae* and *Guttiferae* to be more fully represented than they seem to be.

In the higher grass lands *Cotoneaster buxifolia Wall.*, *Rosa Leschenaultii W & A.* and *Parochetus communis Ham.*, all three common in similar tracts in the Nilgiris and Palnis, are entirely absent as far as my observations go. On the other hand, we find *Anaphalis Meeboldii W. W. Smith* exceedingly common on the Tanakuṁalai ridge, and lower down *Impatiens herbicola Hook, f.*, both of which were first discovered by Meebold in Travancore and have been reported so far from nowhere else.

In the median evergreen sub-type, or on grass land near its borders, *Podocarpus latifolia Wall.* is found, though uncommon. This conifer elsewhere has been seen only in the Tinnevelli and Travancore hills far to the south

Another uncommon plant of these hills is *Utleria salicifolia Bedd.* Of recent years it has been found in another range of Coimbatore hills. It is a gregarious shrub, not a tree as stated in the " Flora of British India," growing in rocky places at an elevation of 4,000 to 5,000 feet and attaining a height not exceeding 6 feet with a basal diameter of 1½ inches.

Pyrenacantha volubilis Hook., a slender climber apparently unreported from India up to the time Vol I of the "Flora of

British India" was published in 1875, and since reported only from the Palni and Tinnevelli hills (*vide* Gamble's "Flora of the Presidency of Madras") occurs in the semi-desert type of our area. It may be of interest to note that I have recently found this species in the northern part of the Nellore District, at least 350 miles north of the Anaimalais.

From all sources, including those already alluded to, I have drawn out a list of 1,805 species, exclusive of fungi, as occurring in the Anaimalai range. It is certain that this list is far from complete for the published works bearing on this tract include the whole of the Madras Presidency, and it is not always possible to ascertain whether any particular species has been found there when these hills are not specifically named as an habitat. I have thought it best to omit any species not definitely noted as having been observed in these hills

Of the 1,805 species listed, exactly 1,500 find place in my own notes. The main deficiencies are probably among the *Orchidaceae*, *Eriocaulaceae*, *Cyperaceae*, *Graminaceae* and *Cryptogams*. The final list is not likely to fall short of 2,200.

Of the 1,805 species recorded at present, 1,661 are *Phanerogams* and only 144 are *Cryptogams*. The *Monocotyledons* number 214 and the *Gymnosperms* only three, namely: *Gnetum scandens Roxb.*, *Podocarpus latifolia Wall.*, and *Cycas circinalis Linn.*

There are 13 orders represented by 30 or more species, headed by the *Leguminosae* with 163; no others have as many as 100, *Euphorbiaceae* being second with 91.

Nineteen genera are represented by 10 or more species, headed by *Crotoloria* with 29 and *Impatiens* with 26, the rest all falling below 20.

Synoptical Table.

Division	No. of natural orders	No. of genera.	No. of species.
I. Phanerogamia ..	140	765	1661
A. Dicotyledones ..	116	640	1444
1. Polypetalae ..	63	286	650
(*a*) Thalamiflorae ..	22	81	179
(*b*) Disciflorae ..	18	94	178
(*c*) Calcyciflorae ..	23	111	293
2. Gamopetalae ..	33	253	546
3. Monochlamydeae ..	20	101	248
B. Gymnospermae ..	3	3	3
C Monocotyledones ..	21	122	214
II. Cryptogamia ..	4	66	144
TOTAL ..	144	831	1,805

Orders with over 30 *Species.*

1. Leguminosae	163	6. Graminaceae	58	11. Malvaceae	32
2. Euphorbiaceae	91	7. Urticaceae	50	12. Convolvulaceae	
3. Rubiaceae	70	8. Labiatae	44	13. Asclepiadaceae	31
4. Compositae	67	9. Orchidaceae	42		
5. Acanthaceae		10. Scrophulariaceae	39		

Genera with 10 *or more Species.*

1. Crotolaria	29	8. Eugenia	14	16. Osbeckia	11
2. Impatiens	26	9. Strobilanthes		17. Blumea	10
3. Ficus	17	10. Desmodium	13	18. Leucas	
4. Ipomoea		11. Hibiscus	12	19. Euphorbia	
5. Indigofera	15	12. Vitis			
6. Diospyros		13. Grewia			
7. Asplenium		14. Loranthus			
		15. Habenaria			

II. The Burmese Sesamum Varieties. Notes on their Variation and Growth.

By A. McKerral.

(With Plate XI.)

[Read at the Indian Science Congress, Jany. 1918.]

1. Introductory.

Sesamum forms one of the genera of the order Pedalineae, an order which has its closest affinities with Bignoniaceae and Acanthaceae. De Candolle (1) remarks that "Sesamum, in the widest sense of the name, has ten (species), all African, except perhaps the cultivated species." Hooker (2) gives three Indian species: *S. indicum*, to which all the cultivated forms belong, *S. laciniatum*, a native of the Deccan Peninsula, and *S. prostratum*, found on sandhills near the sea at Madras, the two latter being prostrate, whereas *S. indicum* is an erect plant.

The literature of Sesamum is comparatively scanty and the plant does not seem to have received the attention which its importance as a source of oil merits. Thus De Candolle merely remarks that "there are two races, the one with black, the other with white seed, and several varieties differing in the shape of the leaf. The difference in the colour of the seeds is very ancient, as in the case of the poppy." Watt (3) gives a fairly full account of the methods of cultivation in India, with statistics of acreage, outturn, etc., but in this account again very little information is given regarding the characters which separate the different forms from each other. The author on this subject merely remarks, "there are two crops, a rabi and kharif and various cultivated forms of the plant, some specially suitable for growing in the kharif season some as early rabi crops Two at least of these are easily recognized, one with white seeds (safed til), the other with black (kala til). The latter is much the more common form and is reputed to yield a superior oil." Howard (4) gives an account of the pollination mechanism and the process of fertilization and indicates the methods to be adopted in improving the plant.

In Burma Sesamum has an importance as a food plant which it probably does not possess elsewhere. The oil is the material universally used in Burmese cooking and confectionery and takes the place of the 'ghi' used by Indians. The area under the crop in Burma is now close on 1¼ million acres, the largest of any province in India and not only is the produce of this wholly consumed in the Province but there is also a considerable import of seed from Bombay and elsewhere. Most of the crushing has up till the present been done in the ordinary village bullock mill, and since groundnut began to be extensively cultivated there has been adulteration with the oil of the latter on a considerable scale. The industry, however, is at the present time in an interesting stage of evolution. Many Burmans are erecting power mills in which the ordinary wooden mill is attached to an overhead gear and a battery of six to twelve of these driven by an oil or steam engine. It is probable that although little discrimination is shown at present between the oil of the different kinds this is due mainly to the fact that a supply of pure seed of one kind cannot be obtained and that, given such a supply, a demand accompanied by better prices for superior grades of oil would probably arise.

In view of these considerations and on account of the almost complete want of information regarding the differentiating characters of the different kinds and their agricultural and industrial importance, observations have been made during the last three years on a large and representative collection of varieties from the principal Sesamum districts in Burma. These were first grown at the Tatkon Agricultural Station in 1914, when single plant selections were made which have been propagated during the last two years. The collection of single plant cultures now amounts to over 150 and the remarks which follow have been based on observations made on these.

2. VARIATION IN CHARACTERS.

In the first place it may be noted that the Sesamum plant shows marked polymorphism—a single character often varying much in one and the same plant. This is most marked in the leaf shape, the number of cells in the capsule, the shape of the capsule and the number of stamens (normally 4). Differences in seed colour which could be ascribed to causes other than imperfect ripening and other external factors were not, however, observed.

The following are the main characters on which classification can be based.

The Leaf.—There is a marked difference between the leaves on the lower and those on the upper part of the axis. The lower are much larger and generally lobed or pinnatisect. The middle leaves are smaller, usually entire, and lanceolate in shape, while those towards the apex which subtend the flowers in the more crowded part of the inflorescence are linear oblong.

In position the leaves are usually opposite or sub-opposite and decussate but there is often much departure from this arrangement, especially in the upper part of the axis where they may assume an alternate arrangement.

Often again the leaves, instead of occurring in opposite pairs, may occur in whorls of three, or even four, arising from practically the same point on the axis. This character, coupled with certain arrangements of the flowers and fruits, gives rise to various types of plant, each breeding true to their distinctive characters.

Branching Habit.—In the axil of each leaf there are three buds. These may give rise either to secondary (vegetative) branches or produce directly flowers on short pedicels. When a vegetative branch is produced it always arises from the middle bud of the three and the other two buds usually remain undeveloped and appear on either side of the branch as small yellow glands (nectaries). In the case of the buds producing flowers directly, one, two, or all three of the buds may produce such. The forms differ widely among themselves in the number of vegetative branches which they produce. In certain forms none at all are produced and the plants form nothing but flowers and fruits from the lowest axil right up the stem (Plate XI). Usually, however, at least a pair of branches are formed in the axils of the lowest leaves (Plate XI). The other extreme is exhibited by plants which form branches right up the stem with only a small apical fraction of the latter left to the production of flowers (Plate No. XI). Intermediate forms showing all different degrees of branching are also found. The secondary vegetative branches produce flowers and fruits in the same way as the main stem.

This variation in branching habit is from the purely agricultural point of view perhaps the most important of the differentiating characters of the Sesamums. The degree of branching affects the life period of the plant. Plants with no side branches begin to produce flowers and fruit earlier and, under conditions of scanty rainfall, complete their life period in a much shorter time than those of the other type. The non-branching types are accordingly most suited to conditions where the rainfall is precarious and where the plant has to rush through its life period in the shortest possible time. The branching types are more suited to conditions where the water supply is assured, as in tracts of good rainfall or where the soil is retentive of moisture. Hence we find that in Burma these branching types are preferred for cold weather sowings where the plant is started on the tail end of the monsoon and has an assured supply of moisture, or for early sowing in districts of heavier rainfall. On the other hand the shorter lived, unbranching types are on the whole more suited to the precarious rainfall of the dry zone tracts of Burma where the crop is sown in the early rains. In these regions, however, the rainfall varies much in the early rains and it is found that many cultivators endeavour to ensure themselves by growing both branched and unbranched types either separately or in mixture.

In 1916 counts were made of the rate of formation of capsules on each of a branched and unbranched type, twenty plants of each being placed under observation, and the averages struck The results are shown in the following tabular statement. Both cultures were sown on 9th June.

Type	Average number of branches per plant at maturity.	Date of appearance of first flower	Date of appearance of first capsule	No. of capsules per plant at harvest	Date of complete maturity.
Much branched.	13·4	20th July	25th July	397	13th Aug
Little branched.	2 8	10th July	13th July	137	12th Aug.

These figures show that under good conditions of rainfall, as at Tatkon, the branching type is a much heavier yielder and can finish its life-history as quickly as the unbranched type Under such conditions it is the most profitable type to grow If, however, a serious break in the rains had taken place a very different result would have been got. In such circumstances the branching is inhibited, only small leafy shoots being formed in the axils and little or no seed is formed.

The Colour of the Flower.—This itself has no economic importance but the colour variations may be used to distinguish between types which are otherwise very similar. The most frequently occurring type of flower is in colour white suffused with pink The anterior lobe of the corolla has usually a pinkish marginal band about ⅛ inch or less in breadth. This lobe is longer than the other four lobes and inside the corolla and immediately behind the anterior lip there is a depression coloured yellow with pink or purple mottling. From this a band of mottling extends backwards to the throat of the corolla. In one culture the purple mottling was much deeper in tone and more widely distributed in area than in any of the others. In some the rose pink hue of the corolla limb and tube, as also of the marginal band of the lip, is very faint, while in certain types it appears to be altogether absent and the flower is pure white to look at. An examination of the interior of such flowers showed, however, that the yellow colouration is always present in the depression above described.

The Capsule.—As a result of the leaf axils bearing either two or three capsules we get very distinctive types of plant. The differences, too, are inherited and selection can be made to isolate types showing each of these kinds of habit. These differences are further accentuated by differences which occur in (1) the relative length of the capsules and internode, (2) the position of the leaves—whether occurring in pairs or in threes or fours and whether opposite or alternate. From combinations of these variations the following types with reference to the inflorescence and fruiting system, can be distinguished ·—

(i) Plants with internodes longer than the capsules, the latter occurring in opposite pairs.

(ii) Plants with internodes longer than the capsules, and the latter occurring in fascicles of threes. In this type we get a decided whorled appearance, especially if the leaves arise in threes from the same point of the stem (Plate XI).

(iii) Types in which the internodes are not longer than the capsules.

(iv) Types in which the capsules are as long as the internodes and in which the leaves are alternate. The capsules may occur singly or in twos or threes. This type presents when in fruit a main axis completely occupied by the fruits in a spiral arrangement. These types are well known to Burmese cultivators who have specific names for each of them, e.g. " gwa-gale " or small fork which refers to type (i), patle " or " round-about " to (ii), and " tet-kyaw " or " climb and jump " which is descriptive of type (iv)

In shape the capsule shows very considerable variation from type to type and generally also among the capsules on one and the same plant. Plate XI shows capsules each taken from a separate plant and illustrates the variation in capsule-shape. The number of cells also varies from two to ten and this variation is often found on one and the same plant. The shape of the capsule depends to a great extent on the number of cells. When there are only two or four the shape is oblong-compressed with a quadrilateral section; when the number of cells is greater than four the capsule assumes a more or less cylindrical shape with polygonal section.

The length varies considerably and some of the many-celled types are sub-globose in shape. The apex of the capsule is shortly acuminate, but in some cases it is considerably longer than in others. Capsule-shape is rather a fluctuating character on which to base classification.

Colour of the Vegetative Parts.—This varies from light yellow to dark glaucous green and is constant in the pure line. Although environment has a marked effect on the hue of the green, strong rich soils tending to produce a darker shade, the inherited differences in this character are nevertheless constant enough to serve as distinctive marks and in fact the mass effect of the different shades is often quite striking.

Pubescence.—Some types are almost glabrous while others are quite hairy: types which are light yellow in colour seem often to bear more hairs than darker coloured types. The character can be used in differentiating type from type.

Seed Colour.—The seed may be of the following colours :—
White, grey or drab, greenish, brown, black

These colours have probably much significance in connection with the quality of the oil produced. Howard states (4) that in India the black-seeded varieties are supposed to give the highest yields and the white-seeded the best quality of oil. A white-seeded Burmese type named 'Thadunbyu' is usually said by cultivators to give the best quality of oil and this coroborates the Indian opinion. The present investigations, however, have not yet reached the stage when they can throw light on this aspect of the question

3. CLASSIFICATION.

The leading principle in classification of cultivated plants should be that the first basis of division should be a character of economic importance. It would for example be next to useless to classify Sesamum types according to the shape or colour of the flower, even although the variation in that organ were wide enough for classificatory purposes. Characters of economic importance will be either agricultural or industrial and it is preferable to frame a system which will include both as bases. From the agricultural point of view the branching character, associated as it is with life period, which in Sesamum is very important, is perhaps the most suitable character to use. If, however, it can be shown that the fruiting habit (*i.e.* fruit in singles or clusters) or the number of cells in the capsule, have a marked effect on yield, then these also might take equal rank with the branching habit. From the industrial point of view it is likely that seed colour will be of greatest importance. Hence as a tentative scheme the following classificatory scheme for the Burmese Sesamums is proposed.

A. Much branched, late, white seed.
A^1. „ „ „ coloured seed.
B. Unbranched (less than two pairs of branches) early, white seed.
B^1 Unbranched, early, coloured seed.

The disadvantage of this scheme is of course that there is continual gradation from little branched to much branched types, the division is accordingly arbitrary and the classification is avowedly more agricultural than botanical. It gives four main classes under each of which the types can be further catalogued according to the other characters previously described.

4. ABNORMALITIES.

Any account of Sesamum would be incomplete without reference to the peculiar condition often encountered which may be called "green flower" (plate XI). Plants showing this condition have the following characteristic changes in their inflorescences. The corolla of the flower remains green and the floral organs, stigma and stamens are also green and imperfectly differentiated. Such an inflorescence would, in fact, supply very useful material for explaining to an elementary class of botany, the genesis of these organs from ordinary leaves. The cause of the condition is obscure, and so far as is known cannot be ascribed to fungus attack. The plants usually produce no seed at all in the affected parts, but lower down the stem a few capsules are usually found from which seed can be obtained. Such seed sown out at Tatkon in 1916 did not result in producing a greater number of 'green flower' plants than the average, and clear evidence of the condition being inheritable has not yet been obtained. The percentage of such plants in different cultures varies very much: counts were made at Tatkon in 1916 when it was found that the percentage of green flower plants varied from zero to 40% in the different cultures.

Field observations do not tend to associate its occurrence with any particular environment. It may occur badly either in very rich loam or in poor sandy soils such as are common in mid Burma. Accounting as it often does for the loss of at least one-third of the crop it is obviously a matter for careful investigation with a view to finding if possible suitable remedies.

5. IMPROVEMENT.

The large collection of cultivators, varieties examined showed that very few were pure; most showed a mixture of the different types described above with consequent differences in yield, hardiness, and colour of seed and possibly quality of oil. It has not yet been possible to procure oil analyses, but it is fairly certain that among such a variety of types differences in this character, as also in yield of seed and quality of oil, will be likely to occur. The method of improvement by selection of single plants has accordingly been adopted as that most likely to yield results along any one of the above lines. The question of how far cross-pollination takes place is of importance in using such a method. Howard states that the Sesamum flower opens in the very early morning and that pollination (self) takes place before six o'clock, but that in many cases the failure of the anthers to develop properly may leave an opening for crossing, The single plant cultures grown at Tatkon had a very uniform appearance and the writer is not at present inclined to think that in that locality at least cross-pollination takes place to a disturbing degree In the cultures of 1916 a look-out was kept among the white-seeded kinds for plants showing coloured seed. Four such plants were found which when sown out in 1917 gave offspring as follows :—

Serial No.	Colour of seed of culture.	Colour of seed of errant plant.	PROGENY OF ERRANT PLANT IN NEXT GENERATION.	
			Coloured.	White.
1	White.	Greenish brown.	137	56
2	White.	Greenish brown.	129	99
3	White	Black.	133	17

The results would seem to indicate that these plants were real hybrids due to cross-pollination in the previous year. Further tests and greater experience is, however, required in order to be able to say how far cross-pollination is to be expected.

REFERENCES.

(1) De Candolle. "The Origin of Cultivated Plants."

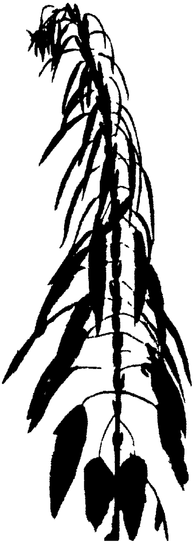
(2) Sir J. D. Hooker. "Flora of India."

(3) Sir George Watt, "The Commercial Products of India."

(4) Howard. The article on 'Sesam' in "Die Züchtung der landwirtschaftlichen Kulturflanzen," by C. Fruwirth.

EXPLANATION OF PLATE XI.

Fig 1 —Unbranched type of sesamum.
, 2.—Slightly branched plant.
,, 3.—Fully branched plant.
, 4.—Type showing whorled arrangement of fruits.
5.—Variation in capsule shape in sesamum types. Each capsule from a separate variety.
,, 6.—Condition of plant known as "green flower."

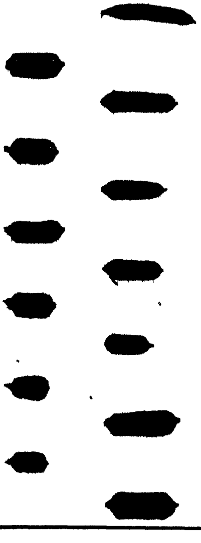


(1)

(2)

(3)

(4)



(5)

(6)

12. A Short Account of the Wandering Teachers at the Time of the Buddha.

By BIMALA CHARAN LAW, M.A.

At the time of the rise of Buddhism, there were various classes of wanderers who, in the language of Dr. Rhys Davids, "were teachers or sophists who spent eight or nine months of every year wandering about precisely with the object of engaging in conversational discussions on matters of ethics and philosophy, nature lore and mysticism. Like the sophists among the Greeks, they differed very much in intelligence, in earnestness and in honesty "[1]

In the *Aṅguttara Nikāya* we find mention of two classes of Paribbājakas (Paribrājakas). The first class is known as *Aññatitthiya Paribbājaka*,[2] and the second class as *Brāhmaṇa Paribbājaka*.[3] The *Brāmaṇa Paribbājakas* were in the habit of discussing Saṁdiṭṭhika dhammā, that is, matters relating to this phenomenal world, the term corresponding in some way or other to Lokayātrā, the ways of life or mundane affairs The *Aññatitthiya Paribbājakas* were interested generally in the question of self-realization in thought and in conduct, that is to say, in " solemn judgments about human life and the whole of things." But in this paper an attempt has been made to give a short account of the Sramaṇas (Samaṇas) and the Paribbājakas excluding those who are known throughout the Buddhist Literature as the six titthiyas or heretics.

The term Paribbājaka may require a word of explanation. It is stated in the *Vāsistha Dharmasāstra* (Chap. 10) that a Paribbājaka should shave his head, clothe himself with one piece of cloth or antelope skin or cover his body with grass plucked by cows. He should sleep on bare ground.

Prof. Rhys Davids is the first to draw our attention to the wanderers (Paribbājakas) or the sophistic institutions quite peculiar to India.[4] It is difficult to say when exactly this order of wanderers came into existence. The history of the Paribbājakas is perhaps as old as the closing period of the Rig Veda. We are not in a position to describe in detail or with accuracy the functions of the wanderers if they at all existed in the Vedic times.

Thus we may hold with Prof. Rhys Davids that the wanderers were not known much before the rise of Buddhism.[1] The sophistic institutions, strictly so called, may be said to date from Uddālaka Āruṇi, the distinguished philosopher, father of Svetaketu who tried by his personal example to set up a commonwealth of thought in India which allowed no distinction of caste, creed, age and sex.[2]

---

[1] Buddhist India, p. 141.

[2] Anguttara Nikāya (P.T S), Vol. IV, p. 35.

[3] Ibid. Vol. I, p. 157.

[4] Buddhist India, pp. 141-148.

Although a Brahmin of erudition and influence, he sought after knowledge without considering for a moment the social position of the personages to whom he went to learn With Prof. Rhys Davids we may further maintain that philosophy in India up to a certain date was but a lay movement. Yajnavalkya was probably the connecting link between the past and the subsequent ages. The sophistic activity progressed rapidly during the reign of Janaka, the king of Videha, one of the best known patrons of Indian philosophy. The kingdom of Janaka resounded with philosophical contests held between Yajnavalkya and other renowned teachers of his time, among whom were some women.[3] But that was in a period of Indian history when the ideal of renunciation had not taken permanent hold of the mind of the people. Yajnavalkya and his opponents were almost without single exception householders. It is nevertheless in the expressions of Yajnavalkya that we can trace for the first time any reference to two orders of teachers, hermits and recluses (Tāpasas and Sramaṇas).

The period which elapsed immediately before the advent of Buddhism may be called 'the Samaṇa Brāhmaṇa period'—a current idiom vaguely representing the various classes of Indian teachers who might be arranged according to their attitude towards penance, sacrifice, caste, asceticism and other concerns of human life and society. There is no hard and fast line to be drawn between one order and another,—the transition from one to the other being possible in the case of all individuals—whether between the Jaṭilakas and the Paribbājakas[4] or between the Sramaṇas and the Brāhmaṇas, the difference was one of degree and not of kind. Here we shall concentrate our attention on the Paribbājakas strictly so called in the oldest Buddhist records.

It is evident from the early Buddhist passages that the term Sramaṇa may be understood in a two-fold sense. Taking it in its general sense, we may understand by it all those religious bodies or teachers of philosophy who turned monks, who were known as mendicants (Bhikkhus) because of their practice of begging, who shaved their heads clean as a mark of distinction from the hermits (Tāpasas), the wearers of matted hairs, as well as from the Brāhmaṇas, the wearers of crest or lock. The name in its specific sense is to be applied to those bodies of men who were opposed in their general attitude not only to the Brāhmaṇas buried in worldly affairs or to the hermits who practised all sorts of penances, but also to some of the wanderers who took interest in mundane affairs. The Sramaṇas were all hostile in their attitude towards Brāhmaṇical traditions. The term Sramaṇa is applicable to the order of six Titthiyas (Tirthikas), founders of schools. The Sākyaputtiya Sramaṇas or the Buddhists were of course in the same predicament. The Sramaṇas were the advocates of strict celibacy. The Varṇāśramadharma which signifies the tenets or injunctions of Brāhmaṇism was discredited. Politics was with them but a thing inferior, i.e. a foolish talk. The only thing which really interested them was the realization of the higher ideals of life in thought and in practice. We may suppose that the wanderers, by whom we mean the Brāhmaṇa Paribbājakā with their various orders such as those represented by the Tedaṇḍikas and others,[1] furnished a connecting link between the Sramaṇas who revelled in philosophical speculations (Anvikshaki) and the Brāhmaṇas with whom, as with the Romans, philosophy was a mere Lokayātrā (way of life).[2] Have we any data for distinguishing the wanderers, qua-wanderers from the Sramaṇas? We may here call to our aid some of the Buddhist passages, particularly the passage on Silas lending its name to the first volume of the *Dîghanikāya* called the Sîlakkhandhavagga. Proceeding in the light of this interesting tract or morality, we can say that the precepts as expounded by the Buddha himself admit of a two-fold explanation. Such terms as Pharusavācā and Saṁphappalāpa convey a general as well as technical meaning. It is a curious fact that the term Pharusavācā or wrangling phrases[3] in its technical sense refers to the practice of the Sramaṇas, and the expression Saṁphappalāpa (idle gossip) in its technical sense is used in connection with the Paribbājakas in question. It is worthy of note that these wanderers are spoken of in the Buddhist texts in identical terms. We shall therefore remain content with quoting one of these stock passages throwing some light on the ways in which they spent their time.

---

[1] Buddhist India, p. 141.

[2] Chāndogya Upanishad, Book 6.
Kausîtaki Upanishad, Chap. 1.
Svetaketu Jātaka No. 377 (Fausboll's edition).
Uddālaka Jātaka No. 487 (,, ,,)
Mahābhārata Ādiparva (Upamanyu Upākhyānaṁ).

[3] Brihad Āranyaka Upanishad, Books 2-4.

[4] Vasiṣtha—Smriti in Smritināṁ Samuccaya, p. 201.

---

[1] "Tridaṇḍena Yatiścaivaiṁ lakkhaṇāni prithak prithak." Dakkha-Smriti, Chap. 1, Verse 12.

[2] See for the definitions of Anvikshaki and Lokayātrā, Kautilya's Arthashastra, p. 6. (Shamshastri's English Translation.)

[3] "You don't understand this doctrine, and discipline. I do.' "How should you know about this doctrine and discipline?" "You have fallen into wrong views." "It is I who am in the right." "I am speaking to the point, you are not." "You are putting last what ought to come first and first what ought to come last." "What you have excogitated so long, that's all quite upset" "Your challenge has been taken up, you are proved to be wrong." "Set to work to clear your views. Disentangle yourself if you can." (The Dialogues of the Buddha, pp. 14-15).

Cf. Majjhima Nikāya, Vol. II, pp. 3, 243, etc.

The list of topics given below discussed by them is of great historical importance as indicating the manner in which the wanderers gradually paved the way for a science of polity in India.

"Now at that time Poṭṭhapāda seated with the company of the mendicants all talking with loud voices, with shouts and tumult, all sorts of worldly talk: to wit, tales of kings, of robbers, of ministers of state, tales of war, of terror, of battles, talks about food and drink, about clothes and beds and garlands and perfumes, talks about relationship, talks about equipages, villages, towns, cities, and countries, tales about women and heroes, gossip such as that at street corners and places whence water is fetched: ghost stories desultory chatters, legends about the creation of the land or sea and speculations about existence and non-existence." (The Dialogues of the Buddha, Vol. I, page 245).

Examining carefully the import of all these Buddhist passages we may perhaps go so far as to maintain that these wanderers, qua-wanderers, were the sophistic predecessors of Chanakya to whom tradition ascribes the authorship of the *Arthaśāstra*. It is a well-known fact that in the *Arthashāstra*, some schools and individuals are quoted by names, namely the *Manavas*, the *Barhaspatyas*, the *Ausanasas*, the *Ambhiyas*, *Parāśara*, *Vātavyādhī*, *Viśālākshya*, *Piśuna*, *Pisunaputra*. *Bharadvāja*, *Kaninka*, *Bharadvāja*, *Kinjalka*, *Kātyāyana*, *Bahudantakaputra*, *Kaunapadanta*, *Dirghascārāyana* and *Ghoṭamukha*. The list is far from being exhaustive. Some of the names such as *Ghoṭamukha* and *Dirghascārāyana* are to be found in the Kāmashāstra by Vātsāyana. We learn from the Buddhist texts that Ghoṭamukha, one among the predecessors of Chanakya and Vātsāyana, was among the contemporaries of Buddha Gautama. He was a Brahmin who naively denied virtuous life. ("N'atthi Dhammiko Paribbājo").[1]

In the Buddhist texts we find that one Dîghakārāyana who was a personal attendant of King Pasenadî of Kosala was probably identical with Dirghascārāyana, one of the predecessors of Chanakya, and who was as much a kingmaker as, perhaps, Chanakya himself.

The early Buddhist texts together with some of the Upanishads introduce us to some of the distinguished Brahmin teachers whose views are held authoritative in the older legal manuals now extant. It may not be easy to identify the names as given in the Buddhist texts with those in the Kautiliyaṁ Arthashāstram. But it is not unlikely that some of the teachers mentioned in the *Arthaśāstra* can be identified with some of the Brahmin wanderers mentioned in the Buddhist texts.

---

[1] Majjhima Nikāya, Vol. II, p. 157. "Ghoṭamukha-Sutta" (P.T.S.).

We must not dogmatise on such a disputed question as this. We might perhaps find some clue to the identification of the names in the fact that most of these were not the real names but nick-names expressive of some physical characteristics of the teachers. Consider, for example, these two names mentioned in the Arthashāstra: the Vātavyādhi, the Rheumatic, and Vishālāksha, the goggle-eyed, and compare them with the two names mentioned in the Buddhist texts: Poṭṭhapāda "the elephantiac" and Uggahamāna, "the sky-gazing." If it be objected that similarity obtained does not amount to identity, our reply will be that it does not make much difference whether the names are identical or not. What we contend for is that these wanderers were exactly the sort of persons who cleared the path for Chanakya. We append below a list of the wandering teachers with illustrations to show their attitude towards various problems of life, society and philosophy.

APPENDIX.

THE LIST OF WANDERING TEACHERS AND THEIR TOPICS OF DISCUSSION.

Poṭṭhapāda (The Rheumatic)[1] ..	Buddha called on him at the Hall put up in Queen Mallika's Park near Sāvatthi, where he was staying with 300 followers. The subject of discussion was the *nature of soul.*
Bhaggavagotta[2]	Buddha called on him at the Malla town called Anupiya. The subject of discussion was the *behaviour of Sunakkhatta of the Licchavi Clan.*
Acelako Pāṭikaputto[3] ..	Buddha met him at Mahāvana at Vesali. The principal subject of discussion was *Agañña (Efficient cause).*
Nigrodha[4] ..	Buddha called on him at the Gijjhakuṭa in Rājagaha. He had 3,000 disciples.

---

[1] Poṭṭhapāda-Sutta, Dīgha Nikāya (P.T.S.), Vol. I.
[2] Dīghanikāya (P.T.S.), Vol. III, p. I.
[3] Ibid , Vol. III, pp. 12-35.
[4] Dīghanikāya, Vol. III, pp. 36-57.

	The value of Life of the Ascetics was the subject of discussion. Buddha refers to this discussion in the Kassapasîhanāda Sutta (D.N., Vol. I, p. 176).
Sandaka[1]	Ānanda called on him at the Pilakkha cave at Kosāmbi. *Ānanda pointed out that no other speculations except those of Buddha could furnish a true standard of the judgment of conduct.*
Sāmaṇḍa[2]	He went to Nālakagāma where he discussed with Sāriputta the *question of pleasure and pain.*
Ajito and Paṇḍisso[3]	Went to Sāvatthi where he discussed with the Buddha the question of 500 *states of consciousness* (Pancasatāni cittaṭṭhānāni).
Sarabho[4]	Met Buddha at Rājagaha. The subject discussed was *the worth of Buddha's teachings.*
Annabhāro & Varadharo[5]	Met Buddha who instructed them in four points *relating to his doctrine.* (*Cattāri Dhaṁmapadani*)
Uttiyo[6] Kokanudo[7]	Met Buddha at Sāvatthi. They asked Buddha *whether the world was eternal or not, finite or not, whether soul and body are the same or different, etc.*
Potaliyo[8]	Met Buddha at Sāvatthi. The Buddha asked as to which *of the four personages* (*puggalas*) *Potalivo liked. He answered that he liked the puggala who did not blame the blame-worthy nor praised the praiseworthy.*
Moliyasîvako[9]	Met Buddha at Sāvatthi. He asked *what were the phenomena which presented themselves to our consciousness.*
Sajjho[10] Sutavā[11]	They told Buddha that *it was impossible for the Arhats* (*saints*) *to commit five sins. Was it true ? Baddha replied "Yes."*

---

[1] Ibid., Vol. 1, p. 513.
[2] Aṅguttara Nikāya (P.T.S.), Vol. V, pp. 120-121.
[3] Ibid., Vol. V, p 230.
[4] Ibid., Vol. I, p. 185.
[5] Ibid., Vol. II, pp. 29 and 176.
[6] Ibid., Vol. V, p. 193
[7] Ibid., Vol. V, p. 196.
[8] Aṅguttara Nikāya, Vol. II, p. 100
[9] Ibid., Vol. III, p. 356
[10] Ibid., Vol. IV, p. 371.
[11] Ibid , Vol. IV, p. 369.

Kundaliya[1] ..	Went to Buddha at Saketa. He told Buddha that he used to roam in the ārāmas where he saw that some Sramaṇas and Brāhmaṇas spoke on the *benefit of Itivādapamokkhā* (traditional learning) and some on the *benefit of sacrifice* (*upārambha*). The Buddha replied, "I am concerned only with the *benefit of knowledge and emancipation.*" ("Vijjāvimutti Ānisaṁsaṁ.")
Timbarukkha[2] ..	Consulted Buddha on *Karma* at Sāvatthi.
Nandiyo[3] ..	He asked Buddha to explain to him the *Dhamma, by practising which one can go to Nirvāna.*
Moleyasîvako[4] ..	His view was that what a man enjoyed, he enjoyed on account of his past deeds.
Vacchagotta[5] ..	Consults Buddha on some *metaphysical points.* Again he questions Mahāmoggalāna on the same subject.
Sucimukhî[6] ..	Questions Sariputta at Rājagaha on *modes of eating.*
Susima[7] ..	Interviews at Rājagaha the *Bhikkhus who had just attained Arhatship.*
Uggahamāno[8] ..	Was in the Arama of Mallikā at Ekasālaka. He met Pancakanga Thapati on his way to Jetavana and discussed with him *about the perfect man.*
Pilotiko[9] ..	Met Jānussoni Brahmin on his way from Jetavana. He asked him about the *knowledge of the Buddha.* The Brahmin replied that it was beyond his power to measure the knowledge of Buddha.
Potaliputto[10] ..	Met Samiddhi, a Bhikkhu. He told him that he heard from the Buddha that *Kāga and Vacikammas were no true actions.* Volition or deliberate action is the action in the true sense of the term.
Mahāsakuladāyî[11]	He was staying at Veluvana at Rājagaha in company with many distinguished

[1] Samyutta Nikāya, Vol. V, p. 73.

[2] Samyutta Nikāya (P.T.S.), Vol. V, p. 11.

[3] Ibid., Vol. V, p. 11.

[4] Ibid., Vol. IV, p. 230.

[5] Ibid., Vol. III, p. 257, Sec. 63.
Ibid., Vol. IV, pp. 398 and 401.

[6] Ibid., Vol. III, pp. 238–240.

[7] Ibid., Vol. II, pp. 119–124.

[8] Majjhima Nikāya (P.T.S.), Vol. II, p. 22.

[9] Ibid., Vol. I, p. 175

[10] Ibid., Vol. III, p. 207.

[11] Ibid., Vol. II, pp. 1–22.

	wanderers like Varadhara Annabhāra and others. He informed Buddha that in the past, *Aṅga and Magadha were seething with sophistic activities.*
Cûlasakuladāyî[1]	Buddha called on him at Veluvana in Rājagaha. He calls himself a follower of Nigaṇṭha Nāthaputto. Buddha tried to impress on him that the *observance of five moral precepts and the practice of penance were not enough for the realization of* Summum Bonum.
Vekhanassa[2] ..	The subject of discussion was "*Parama vaṇṇoattā*" i.e. soul in its height of purity.
Tevijja ..	Buddha met him at Mahāvana at Vesāli.
Vacchagotta[3] ..	Vacchagotta *enquired whether it was possible for a householder to attain immortality.* On another occasion, *his enquiry consisted of some ontological problems* e.g. *whether the world is eternal or not.* (Majjhima Nikāya, Vol. I, pp. 483-489). *On another occasion, Vacchagotta held a discussion with the Buddha on some questions relating to ethics.*
Dîghanakha (Long-nailed)[4] ..	Buddha met him at Gijjhakuṭa at Rājagaha He is said to have held this view that nothing of me abides ("*Sabbam me na Khamati*)."
Māgandiya[5] ..	He spoke of Buddha in an opprobrious term as *Bhunohuno* (*Brunahan*). Cf. Isopanishad in which the *Vajasaneyas spoke of some of the unknown opponents who were perhaps unmarried recluses as Atmahano janā.* The *Vajasaneyas regarded their opponents' modes of life as being suicidal.*
Sabhiyo[6] ..	Informed Buddha that the *six distinguished Tirthakaras, Purana Kassapa and others were senior to Buddha by age. But the latter contended that seniority goes not by age but by wisdom.*

---

[1] Majjhima Nikāya, Vol. II, pp. 26–39.

[2] Ibid., (P.T.S.), Vol. II, pp 42–44.

[3] Ibid., Vol. I, p 481.

[4] Ibid., Vol. I, p. 497.

[5] Ibid., Vol. I, p. 501.
Sutta-Nipāta (P.T.S.). "Māgandeyya-Sutta."

[6] Sutta-Nipāta (P.T.S.), p. 157

13. The Isolation of Porphyroxine:

By JITENDRA NATH RAKSHIT.

Merck, in 1837, prepared from opium a substance containing its colouring matter, and called it porphyroxine; Hesse remarked (see Allen, Commercial Organic Analysis, Second Edition, Vol. III, Part II, 330) that the substance prepared by the former investigator was a mixture of several alkaloids, one of which is meconidine and another probably rhoeadine. Demselben (Annalen Supl., 1864-1865, 4, 50) noted that porphyroxine described by Merck agrees with rhoeadine in method of preparation, properties and composition. The alkaloid now isolated was very likely a constituent of what K. L. Dey (Pharm. Jour. (3) xii, 397) obtained on evaporation of the ethereal extract prepared by shaking an aqueous solution of opium made alkaline with sodium carbonate or ammonia, and apparently also of what Merck called porphyroxine. Considering these facts, and that the alkaloid with hot dilute hydrochloric acid gives a beautiful purple solution resembling porphyry, the name porphyroxine may reasonably be retained.

The alkaloid isolated is very soluble in water, in which respect it resembles papaverine, codamine and narceine; it is differentiated from narceine by its ready solubility in chloroform: the aqueous solution either of the base or of its chloride, is strongly lævorotatory, thus limiting its resemblance to codamine. The formula of codamine is $C_{20}H_{25}NO_4$ and that of this substance, as determined by combustion analyses of six different samples, is $C_{19}H_{23}NO_4$. Codamine melts at 121°C. and this at 110°C., and it does not sublime like codamine.

Preparation.—Ten parts of Indian opium powder and five parts of freshly slaked lime are triturated in a mortar for five minutes, then 100 parts of water are gradually added during one hour, rubbing with the pestle all the while. The solution is filtered, and the filtrate shaken with an equal bulk of ether for 10 minutes in a separator. The ethereal layer is then filtered into another separator containing some dry lumps of calcium chloride, shaken for five minutes, allowed to settle and the ethereal solution decanted, filtered and evaporated on a water-bath. A pale yellowish brown, soft, sticky, crystalline residue is obtained, which, when rubbed on a porcelain plate for three to four hours, becomes a dry powder. This is taken in a filter paper and extracted with boiling petroleum ether under a reflux apparatus for twelve hours, four hours a day. The substance not dissolved by the petroleum ether is powdered in a mortar and treated with ten times its own weight of 10 per cent hydrochloric acid, adding 10 c.c. at a time and rubbing all the while in the mortar. After the addition of all the acid, it is continually stirred for half an hour; it is then further diluted with twenty times its weight of water and mixed for another fifteen minutes. It is quickly filtered with the aid of a pump and the residue washed with dilute hydrochloric acid. The filtrate is received in a large test glass and saturated solution of sodium bicarbonate is gradually added, keeping a thin layer of ether on the surface of the liquid and stirring all the while till the addition of a further quantity does not produce any effervescence. It is allowed to stand for a short time for the complete separation of the precipitate. It is then filtered and 200 c.c. of the filtrate are transferred to a separator and shaken with 50 c.c. of chloroform for five minutes. The aqueous layer is transferred to another separator and extracted twice more, with 25 c.c. of chloroform at a time. All the chloroform extracts are mixed together and filtered. The bulk of the chloroform is distilled off from a flask and the rest is transferred to a basin and allowed to evaporate slowly on hot water; the residue obtained sometimes forms a soft, crystalline, sometimes a pale brownish yellow, sticky mass. This is rubbed with a spatula against the side of the basin for an hour, when it becomes a crystalline, pinkish brown powder It is once crystallised from alcohol. It melts at 110°C. to a clear, transparent, pinkish liquid, and gave the following results on combustion :—

1st preparation :—0·1405 g. gave 0·090 g. H_2O and 0·3612 g CO_2.H = 7·12, C = 70·08.

2nd preparation :—0 152 g. gave 6·0 c.c. moist nitrogen at 28°C. and 760 mm. pressure, N = 4·35.

$C_{19}H_{23}NO_4$ requires C = 69·24, H = 6·99, N = 4·26 per cent. The results of several other combustion analyses of samples from different preparations agreed with the above.

When 0 268 g. is dissolved in an excess of decinormal hydrochloric acid and the excess of acid titrated back with decinormal sodium carbonate using litmus as indicator, it is found to have neutralised 8·3 c.c. of the acid; hence 1 c.c. of the acid requires 0 0323 g. of the substance, whereas, assuming the formula of it to be $C_{19}H_{23}NO_4$, 0·0329 g. would be required. It turns the plane of polarisation to the left. It is a non-deliquescent powder, readily soluble in acetone, chloroform, glacial acetic acid, methyl alcohol, rectified spirit and absolute alcohol, soluble in amyl alcohol, carbon disulphide, toluene, concentrated ammonia and water, sparingly soluble in benzene, carbon tetrachloride, ether, petroleum ether and caustic soda solution. It gives a strong yellow colour with nitric acid, a bluish pink colour with sulphuric acid and a greenish violet with sulphuric acid containing a little ferric chloride.

Further investigations on this alkaloid are in progress.

14. The Geotectonics of the Tertiary Irrawaddy Basin.

By G. DE P. COTTER B.A., F.G.S., *Assistant Superintendent, Geological Survey of India.*

[Read at the Indian Science Congress, 1918, and published with the permission of the Director, Geological Survey of India.]

Recent field work in Burma in the districts of Pakokku and Minbu chiefly, has led me to modify in certain respects the views which I in common with others held regarding the history of Burma in the Tertiary Era. In the past it has been too often, I think, the custom to invoke the aid of hypothetical or little proven unconformities in order to explain difficulties in the interpretation of the tertiary sequence. G. E. Grimes[1] supposes an unconformity of erosion between the Irrawaddy and Pegu series, basing this conclusion upon the nature of the Pegu-Irrawaddy boundary along the eastern flank of the Yenangyat-Singu anticline, and the missing beds at that horizon.

This theory, once started, appears to have unduly influenced the minds of subsequent geologists, and the useful observation that in certain areas there is evidence of unconformity between the two series, was converted into a general proposition made applicable to areas where unconformity was extremely doubtful.

In 1908 L. V. Dalton[2] sketched the tertiary history of Burma as follows :—

" In Eocene times, a shallow sea seems to have extended from the base of the Shan Plateau across the present site of the Arakan Yoma into India, gradually deepening westwards, this being slowly filled up by detritus of various kinds, until at the close of the period the conditions led to the deposition of a thin bed of limestone over at least the eastern area, after which some disturbance took place in the west of Burma, as well as in the rest of Eurasia, whereby a low ridge was formed along the line of the present Arakan Yoma, constituting an imperfect barrier, higher and more effective in the north than in the south. Thus, in Miocene times, a shallow sea extended over the present Irrawaddy Valley, which received the detritus of large rivers from the north and east. Deposits of terrestrial vegetation were laid down near the land. giving rise to coal-seams, while the sediments above and below were conglomeratic in their nature. At the same time that terrestrial organic materials were being thus carried down, including bones of land-animals, a marine and littoral fauna and flora existed in the south, and in the more open portions to the north, giving rise by their decay to petroleum deposits. At length the whole region became estuarine, owing to the filling up of the basin and to a movement which greatly increased the height of the " Arakan Yoma," raising it above the sea, and led to the production of anticlinal islands or shallows in the sea to the east, while probably giving rise to the Pegu Yoma. The result of this upheaval was the denudation of the islands of partly consolidated material, the erosion being greatest in the most prominent: so that when in the Pliocene (?) period, a thick series of estuarine and fluviatile deposits was laid down over these, a considerable overlap resulted, the Irrawaddy Series being quite conformable in places to the Miocene below, and elsewhere resting across its upturned edges. Finally, the whole region again became subject to a general elevation, whereby the Irrawaddy Series was laid bare to denudation, and the earlier anticlinal folds accentuated, resulting in the present conformation of the land,—the Miocene being once more revealed as inliers in the mass of the Irrawaddy Beds, marking the position of the islands in the earlier estuary."

---

[1] *Mem. Geol. Sur. Ind.*, XXVIII, pp. 59-60.
[2] *Q.J.G.S.*, Vol. LXIV, p. 642.

It will be seen from the above that Dalton supposed an upheaval at the close of the Pegu epoch, which wrinkled the Pegu deposits into numerous anticlinal islands, over whose eroded remains the Irrawaddy beds were deposited with overlap, and erosive unconformity. E. H. Pascoe [1] favours the hypothesis of the erosive unconformity of the Irrawaddy beds over the areas of Yenangyaung, Yenangyat-Singu, and Minbu, but in the case of the last two anticlines, is willing to accept as an alternative hypothesis (*vide* pp. 132 and 200) the explanation that the discrepancy in thickness of beds in different parts of the anticlines is due to normal faulting, and attenuation.

In the case of Yenangyaung he accepts a theory of E. H. Cunningham-Craig, viz that the Pegus were folded into gentle anticlines whose axes were oblique to the axes of the Irrawaddian folds, this early folding having taken place previously to the deposition of the Irrawaddies.

It will be best to examine the evidence for these views, before putting on record my own.

In the case of the Yenangyat-Singu area, the evidence for unconformity, as put forward by Grimes, is as follows :—

(1) Up to 2,500 ft. (or according to Pascoe's more accurate estimate, 3,420 ft.) of beds are missing from the Pegus in the section near Seikkwa village.

---

[1] *Mem. Geol. Sur. Ind.,* Vol. XLI, pp. 68, 110, 168, 200.

(2) The strata along the eastern boundary, where the missing beds are conspicuous by their absence, are vertical or nearly so. A normal fault would not be sufficient to account for their absence.

(3) Grimes observed "*debris* of the miocene in the basal beds of the pliocene."

In a paper entitled 'The Northern Part of the Yenangyat Oilfield,"[1] I proved to my own satisfaction at least that the Yenangyat anticline was structurally a fold-faulted area, in which the fracture had taken place along the steep eastern limb, leaving the crest entire. The steep eastern limb in which the beds are frequently vertical and in places overturned, is clearly the zone which would be attenuated and weakened by the tangential folding forces.

Assuming then that there is a fold-fault with a shade to the west, Grimes' objection numbered (2) above, is no longer applicable. Such a fault also accounts for the missing beds. I interpreted Grimes' third piece of evidence, viz. that the basal beds of the pliocene contained *debris* from the miocene, in a very different manner. I stated that this debris was really a "mixed accumulation of Irrawaddy rock and broken Pegu strata filled with selenite of apparently secondary origin." The boundary in fact appeared to me to be, in the north of the field near Sabe at least, unquestionably a fault-breccia.[2]

My view of the structure was not accepted by E. H. Pascoe, but he had not an opportunity of visiting those particular sections which I had described, and the question being a question of actual fact, nothing but a visit to the field could have settled it.

Dr. C. Porro confirmed my view of the structure of the Yenangyat anticline, when he surveyed it in 1911. He has alluded to this in a paper published in 1915.[3]

The Minbu anticline is closely similar to that of Yenangyat in respect to the fact that on its eastern flank certain of the Pegu beds are missing, which in Blocks 7 to 10 amount to a maximum of about 2,000 ft of missing beds. I confess to being not entirely convinced of E H. Pascoe's view that the missing 2,000 ft. of beds are those immediately below the Red Bed (Ferruginous Conglomerate). In a section across Blocks 9 and 10 (Section E. of Pl. 33, *op. cit.*) he marks a fossil bed, distinguished by an *Arca* which he refers to *Arca rhombea*, in the beds immediately below the Red Bed. As this bed is found on both sides of the crest in positions that correspond fairly well with its proper distance below the Red Bed, one must conclude that, if the bed is really the same on both flanks, the missing beds are not absent above. but below this horizon. Pascoe marks a strike-fault, running very close to the crest in this part of the field (Blocks 7-10) and on its east side. It seems therefore probable to me that some at least of the missing beds can be supposed to have been cut out by this fault, which was probably a fold-fault. In regard to the south of Minbu, local overlap of the Irrawaddies upon the Pegus has been recorded by A. G. W. Bleeck.[1] In the case of the Yenangyaung field, the anticline is a normal one; there is no asymmetry, no fold-fault, and no belt of missing beds on either of the flanks. There is a remarkable parallelism of dip between the Pegu and Irrawaddy Series. I am personally of opinion that the folding of this anticline was entirely subsequent to the deposition of the basal Irrawaddies. Else, why are the dips of both series parallel? It appears to me that the "cross-fold" theory of E. H. Cunningham-Craig mentioned above has been put forward on very unsubstantial grounds. Pascoe instances as evidence some abnormal dips in the southern part of the field. But these seem to be local; they occur in soft shaly beds in an area rather badly faulted and disturbed by veins of eruptive mud. It is not desirable to lay too much stress upon them.

---

[1] *Rec. Geol. Sur. of India*, Vol. XXXVIII, p. 302.

[2] I remember in one section in Block 60 seeing the Red Earth bed, which should normally lie above the White Sand bed, lying *beneath* it. This was succeeded on either side along the strike by the mixed *debris* rock mentioned above, in which the Red Bed and White Sand were completely missing.

[3] Geology of the Country near Ngahlaingdwin. *Rec. Geol. Sur. Ind.*, Vol. XLV, p. 265.

Dr. Pascoe observed local unconformity between the Irrawaddies and the Pegus in the extreme south of the Yenangyaung field (*op. cit.*, p. 65), but elsewhere, he remarks "no difference of dip can be detected with certainty."

Reviewing then the evidence for a general unconformity between the Irrawaddies and the Pegus, it appears to me insufficient, and that the fair conclusion from the data in our possession is that the unconformities observed are not necessarily more than local in their nature.

I now propose to explain how far I have been led to modify the previously accepted views of the tertiary history of the Irrawaddy basin through recent field work.

In the first place, I believe that the Arakan Yoma existed as a narrow peninsula at the commencement of the Tertiary Era. Work along the eastern foot of the Yoma has revealed the presence of a conglomerate at the base of the Eocene. I first found this conglomerate near Paunggyi three miles south of Ngape in the west of the Minbu district,[2] and subsequently in the west of the Pakokku district as a well-marked horizon, stretching from Saw to Yeshin village west of Pasok. My late colleague H. S. Bion found this conglomerate near Laungshe to the south. It appears to be a fairly constant horizon. Near Saw, a limestone associated with it contains *Orthophragmina* and small nummulites. Similar fossils were also found by H. S. Bion near Laungshe. In the rocks below this horizon I have found Cretaceous fossils (*Exogyra, Nerinaea, Orbitoides*)[1]; there is therefore strong evidence that the conglomerates are basal eocene.

---

[1] *Trans. Min. and. Geol. Inst. of Ind.*, Vol IX, p. 61.

[2] Cotter: Pegu-Eocene Succession in Minbu: *Rec. Geol. Sur. Ind.*, Vol. XLI, p. 229.

From the presence of this belt of conglomerate, I argue the presence of a coast-line in lower eocene times near the present foot of the Yoma.

It is very interesting to recall that another conglomerate at a horizon which is doubtful, but certainly later than the upper Cretaceous outbursts of serpentine, and most probably older tertiary, was found by E. H. Pascoe in the Naga Hills, Assam.[2] We are led to conclude that there was a land barrier in lower eocene times on the site of the present Arrakan Yoma. We are probably justified in assuming that in the lower eocene, the Irrawaddy basin was under the sea. The Shan plateau was certainly land, and there was therefore a long narrow gulf. This gulf has been called by Dr. Pascoe the Pegu gulf.[3] It is probable that the barrier which existed between the Bay of Bengal and the Pegu Gulf was in lower eocene times a fairly new one. The uppermost Cretaceous was marked in this area by considerable volcanic activity. The beds below the basal conglomerate appear to be ashy, and there are numerous outcrops of serpentine along this horizon. This serpentine occurs as rolled pebbles in the conglomerate of the Naga Hills.

Marine fossils occur in the Cretaceous of the Yoma; not only those mentioned above, but also *Cardita beaumonti* from the foothills of the Yoma in Thayetmyo, while *Mortoniceras inflatum* and *Placenticeras sp.* have been recorded from the western flank of the Yoma in Arrakan.[4] Moreover T. D La Touche during his traverse from the Myttha Valley across the Chin Hills[5] collected some echinoids which, he informed me, were on examination said to be Cretaceous.

The presence of these cretaceous fossils seems to indicate that the lower eocene land barrier was a fairly recent one. We must conceive then that the Pegu Gulf, as we can now imagine it, formed a typical geosynclinal area. It received the sediments of the rivers which drained the highlands to the north and east, and probably had an opening only towards the south. I shall proceed to show that it must have been a continually subsiding area until late tertiary times, while the barrier of the Arakan Yoma formed an ever rising geoanticline. It is important to observe that subsidence and not upheaval has prevailed in the Irrawaddy Basin during the greater part of the tertiary era. As time went on, the head of the gulf filled up, and became land, while the sea retreated to the south. The fluviatile sediments and deltaic deposits kept continually shifting southwards in step with this retreat The area of subsidence also has apparently shifted to the south, and it is not at all improbable that the present Gulf of Martaban forms a subsiding geosynclinal area. Subsidence however ceased to affect Upper Burma at the close of the tertiary, and the quaternary is marked by upheaval and changes in the drainage and river systems.

---

[1] *Rec. Geol. Sur. Ind.*, Vol. XLV, p. 270.

[2] Pascoe: Traverse across the Naga Hills: *Rec. Geol. Sur. Ind.*, Vol. XLII, p. 261.

[3] *Mem. Geol. Sur. Ind.*, Vol. XL, p. 23

[4] *Mem. Geol. Sur. Ind.*, Vol. X, p 311, and Vol. XXI, p. 48, footnote.

[5] *Rec. Geol. Sur. Ind.*, Vol. XXIV, p. 98.

Let us discuss each of these statements in turn.

The Yoma formed a continually rising Geoanticline.—Conglomerates, indicating the proximity of a coast-line, are of frequent occurrence in the eocene in the Pakokku district, while the Pegus of that district are a fresh-water or estuarine formation. In the Minbu district conglomerates are common in the Pegus, especially to the north. The Yenangyat anticline may also be included here, although it comes really in the south of Pakokku.

To the south of Minbu, the Irrawaddy series are gravels, while the Pegus are of a more marine type, than in the north of the district. If, however, we wish to obtain good collections of marine fossils from the upper Pegus, we must go still further south to the Thayetmyo district, where we have such formations as the Kama Clay,—a formation which is represented by sands or conglomerates without well preserved fossils in Minbu.

These facts indicate clearly that there has been a steady retreat of the sea to the south; that in lower eocene times the sea covered the greater part of Pakokku district; that in upper eocene times the sea began to retreat from areas such as Myaing in the north of the district; that in Pegu times deltaic conditions with frequent emergence of land (marked by red earth beds) prevailed over the greater part of the Pakokku district, but excepting the south-eastern quarter (Yenangyat, Shinmataung), that these deltaic conditions extended also in Pegu times to the north-west quarter of the Minbu district (area north of Ngahlaingdwin). In the Irrawaddy epoch, the whole basin was deltaic, and all the deposits fresh-water and fluviatile.

A second point not less worth attention is that we invariably find a steadily decreasing dip, as we travel eastwards from the Yoma and stand on rocks higher and higher in the geological series. When therefore deposition was going on in the middle of the geosyncline, the strata near the margins were probably acquiring a slight dip eastward, through earth movements uplifting the Yoma.

The Irrawaddy Basin formed a continually sinking Geosyncline.—The total thickness of the tertiary deposits of the Irrawaddy basin may be judged from the following estimates :—

Paunggyi or Swelegyin Conglomerates, Lower Eocene. Thickness varies from 2,000 to 4,000 ft.

Laungshe Shales, Lower to Middle Eocene. Thickness varies from 9,000 to 12,000 ft.

Tilin Sandstones, Middle Eocene. Thickness varies from 2,000 to 5,000 ft.

Tabyin Clay, Middle Eocene. Thickness about 5,000 ft.

Pondaung Sandstone, Upper Eocene. Thickness varies from 3,000 to 8,000 ft.

Yaw Shales, Uppermost Eocene. Thickness varies from 1,600 to 2,000 ft.

Shwezetaw Sandstones, Lower Oligocene. Thickness varies from 3,000 to 3,500 ft.

Padaung Clays, Upper Oligocene. Thickness 1,500 ft. in Minbu ; represented by sandstones of fluviatile character in Pakokku.

Pegu Series, Miocene. Thickness about 8,000 ft. in south Minbu ; in Pakokku, this Series and the Oligocene together are represented west of Pauk by fluviatile sandstones about 7,000 ft. thick.

Irrawaddy Series, Pontian to Pliocene. Thickness probably about 6,000 ft.

From a study of the fossil contents in these beds, we must suppose that in all probability, none of these deposits were laid down in water much deeper than 200 fathoms; it follows, of course, that there must have been continual subsidence in the Irrawaddy Basin, from the lower eocene right down to the close of the pliocene, in order to allow of these deposits being laid down. Had there been no subsidence, the sea must have silted up and become dry land at a very early period.

It may be supposed that the ratio of rate of subsidence to rate of deposition was not an entirely constant but a variable one. Sometimes subsidence has been faster than sedimentation, resulting in such comparatively deepish water deposits as the Yaw Shales and Padaung Clay overlying shallow water deposits such as the Pondaung and Shwezetaw sandstone respectively. Sometimes the shallow sea has silted up, giving rise to red earth beds. and bands of conglomerate, coal-seams, remains of land vertebrata, etc.

Field mapping in north Minbu and Pakokku has shown very clearly that the red earth beds are discontinuous and numerous in the Pegu Series, and that they occur throughout the Pegus, and do not form a recognizable horizon separating them from the Irrawaddies. In the middle of the Irrawaddy basin, a fairly constant and well developed red earth bed has been chosen as the boundary between the Irrawaddies and Pegus, because it is an easily mapped horizon, and in Yenangyaung, the ONLY horizon which can be mapped with confidence. Assuming then that this red earth bed was the same as that found on the road to Ngape from Minbu, I drew a boundary-line between the Pegus and the Irrawaddies. This boundary was traced by my colleague the late H. S. Bion north to Pakokku, but it became confused by the appearance of other red beds, and by its poor development in certain places in the north Minbu area. North of Pauk in Pakokku, I found that the horizon entirely failed; the beds above and below being ordinary freshwater sandstones of exactly the same appearance as the Irrawaddies of Minbu That these lower freshwater sandstones were not of Irrawaddy age, but much older, was shown by the discovery of *Cadurcotherium* in them by Mr. Lister James. Moreover the discovery of eocene mammalian remains by myself north of Myaing in cherry-coloured earth bands in the Pondaung sandstones finally demonstrated the existence of eocene land conditions and the earlier occurrence of earth beds in the northern part of the basin.[1]

The emergence of land locally through silting up of the sea, in areas of rapid sedimentation, and the subsequent sinking of the land owing to the continuation of subsidence,—these are exactly the conditions which would give rise to local unconformities. Such local unconformities do not imply an upheaval and subsequent depression. We may readily conceive that subsidence may have been going on all along, but that the silting up of the sea locally, *and not any upheaval*, has brought about an interruption of sedimentation, and conditions of what I may call non-conformity rather than unconformity.

It should also be kept in mind, as my colleague Mr. Vredenburg has pointed out to me, that secular variations in the sea level might have promoted a greater spread of deep-sea, or conversely of deltaic facies, and a less local spread of certain stratigraphical gaps. This does not affect the main point at issue, for there is no evidence of any advance of the sea at the horizon of the Pegu-Irrawaddy boundary; all the evidence, as I have stated, pointing to a gradual retreat.

A second point no less important should also be remembered. In the Irrawaddy Basin there are numerous secondary anticlines, minor folds, developed subsequently to the formation of the geosyncline. These folds, it must always be remembered, are not merely anticlines, but folds consisting of anticlines and synclines. Thus, if the Yenangyat-Singu Hills and the Gwegyo Hills are minor anticlinal folds, the narrow belt between them (about 7 to 8 miles broad) is a minor syncline. At the time that these folds were forming, there would naturally be a diminished rate of subsidence or an actual positive movement of upheaval along the anticlinal axis, and an increased subsidence in the synclines. Such conditions would introduce complications in the immediate neighbourhood of these folds, causing erosion in the anticlinal areas and increased sedimentation in the synclines. Local unconformities would also be frequently observed on the flanks of anticlines.

---

[1] Pilgrim & Cotter: Eocene Mammals from Burma: *Rec. Geol. Sur. Ind.*, XLVII, p. 42.

Such conditions might explain any local unconformities observed in the neighbourhood of the minor anticlinal folds of the Irrawaddy Basin.

But in such cases we ought to be able to prove a discordance of dip between the two unconformable series.

And since no discordance of dip has been proved along the flanks of the anticlines of Yenangyaung and Yenangyat, I do not think that we can justifiably have recourse to this explanation in these particular cases.

The Sea Retreated to the South.—In every section which we examine, we find marine sediments at the base, earth beds and fluviatile sediments at the top. We may in fact state our observations as follows:—

(1) In every section there is change vertically upwards, from marine, through deltaic and fluviatile beds to red earth and red earthy conglomerates.

(2) In every section from the Pondaung sandstone upwards, there is a change horizontally along the strike, when traced from south Minbu to Pakokku. from marine to fluviatile and red earth beds.

Ancient Coast-Line.—If, as we suppose, the Yoma barrier was rising while the Irrawaddy Basin was subsiding, there must have been a belt along the flanks of the geosyncline, where there was neither upward nor downward motion. This line of rest was the ancient coast-line, and as time went on, the coast-line advanced to the south and east, as the subsiding area shifted to the south.

If then, in the process of field mapping, we travel along in a direction parallel to the ancient coast-line, we would expect to find that each bed would be of the same *facies* throughout its length, or at least show but little variation along its strike. In such a case the red earth bands would form useful and mappable horizons, as indeed they frequently do.

But if we are mapping a bed whose outcrop runs obliquely to the ancient coast-line, then we should observe, as we do in fact, this change horizontally from marine to fluviatile and earthy *facies*. Each bed changes laterally from a marine to a red earth bed When then we happen to map a boundary oblique to the ancient coast-line, and when our boundary happens to be a red-earth band, I think it sometimes has happened that, instead of mapping a proper geological horizon, we have really been mapping the earthy bed-ends of consecutive beds, which are changing their facies in regular succession. The geological boundary thus obtained would appear to show overlap.

And yet overlap means an advance of the sea, while the whole evidence in our hands points to a regular retreat. In the case of overlap and an advance of the sea, would we not expect to find a change of facies vertically upwards from shallower to deeper water types? Yet all the cases of overlap in Upper Burma are cases where a fluviatile or earthy deposit rests on one of shallow water marine facies.

I suggest then that the overlap observed in the south of the Minbu anticline by Dr Bleeck is really to be explained as the mapping as one horizon of red earth bed-ends which are of different horizons. I have visited this area myself, and see no objection to this hypothesis.

Red earth beds indicate land conditions and represent, it is assumed, an interruption of sedimentation. The word "unconformity" cannot, in my opinion, be applied generally to the Pegu-Irrawaddy boundary, except in this sense.

Evidences of Recent Upheaval.—Evidences of recent upheaval are many in the Irrawaddy valley. The Plateau Gravels are a pleistocene formation containing at Yenangyaung paleolithic flints.[1] The specimen of the pleistocene *Elephas antiquus* from the right bank of the Irrawaddy opposite Mandalay probably also comes from this formation.[2] These gravels occur on the east bank of the Irrawaddy near Yenangyaung, Singu, etc., at a height 300 ft. or more above the present river level. Similarly on either side of the Yaw River in Pakokku, boulders and gravel beds are seen some three hundred feet above the present river level. Every large stream in the Minbu district (Mon, Man, Salin streams) and in the Pakokku district (Yaw, Saw, Kyaw, Maw streams) is flanked by belts of old raised river gravels. The old gravels of the Yaw, with which I am most familiar, are in my opinion derived from Yoma rocks. The Plateau Gravels of Yenangyaung show a curious abundance of quartzite pebbles, and may have come from some area near the head of the Chindwin river, but this is quite uncertain.

---

[1] Pascoe: *op. cit.*, p. 53.

[2] See *Rec. Geol. Sur. Ind.*, Vol. XLIII, p. 13.

The most remarkable thing about these old raised river gravels is that they tell us that river gradients were universally steeper and river currents more rapid in pleistocene times than in the present day. Now-a-days the Irrawaddy at Yenangyaung merely transports coarse sand; formerly it was able to carry pebbles the size of an egg. Now a-days the Yaw River carries small gravel to the ford at Thanbaya-aing; formerly it carried very substantial boulders of nearly one cubic foot to that point.

In several spots in the Saw township of the Pakokku district (near Anain in the Pindaung chaung, near Hnetchaung in the Kyauksit chaung, near Saw in the Saw chaung), enormous boulders of rock 6 to 8 ft. in height are seen lying in the bed of the stream, or on the banks hard by. In the first locality, these boulders were composed of Paunggyi conglomerate, in the others they came from the Kanpetlet Schist Series. In any case they had been transported at least 10 miles from their site by streams which appear incapable of shifting such huge material to-day. There seems to be good reason for regarding them as of pleistocene age. They do not form terraces, but occur at haphazard in different spots either in the bed of the stream or on its banks, but they are occasionally seen raised well above the present water level.

But evidence of recent upheaval is not confined to the older alluvium alone. The streams are beginning to cut down and erode the newer alluvium. Evidence of this may be seen in the Paung stream west of Salin, Minbu district, and in many other places.

The Age of the Anticlines of the Irrawaddy Basin.—Having explained the Irrawaddy Basin as a subsiding geosyncline, we may consider now the age of the small anticlinal folds in this basin.

In dealing with this question, it seems to me that we have to consider the dips and amount of displacement from the horizontal in the various tertiary groups, and also the evidences of unconformity with discordance of dip.

It would be absurd to suppose that all the anticlines are of the same age. I think most geologists would admit that some folds are earlier than others. Let us then consider some of the main folds.

First there is the Pondaung Range which is over 200 miles long, and rises to a height of over 4,000 ft. In the Maw valley near Tilin there are deposits of gently dipping upper tertiary gravels (Maw gravels), a local facies of the Irrawaddies, resting upon the upturned edges of the lower eocene with strong unconformity and discordance. This discordance proves that the Pondaung fold is very much older than the Maw gravels and therefore pre-Irrawaddian, perhaps even lower tertiary.

The folds of Yenangyaung, Yenangyat-Singu, and Minbu appear to me to be of an age not earlier than Irrawaddy. The Irrawaddy series is vertical or overhanging all along the east boundary of the Pegu outcrop at Yenangyat, and appears to have suffered just as much disturbance as the Pegus below; besides there is parallelism of dip, so that we have got to assume the Pegus horizontal and unfolded at a time when the Irrawaddies were being horizontally deposited. There is also parallelism of dip at Yenangyaung and Minbu, and theories of pre-Irrawadian cross-folds in the Pegus appear to me to be unsupported by field-evidence; the more obvious and probably correct conclusion from the data in our possession being that these folds are not earlier than Irrawaddian.

The Pagan-Gwegyo-Ngashandaung fold appears to be mainly post-Irrawaddian. Yet there is some doubtful evidence of contemporaneous erosion in the south of the field.[1]

If such is the case, it may be supposed that the anticline started to form shortly before the opening of the Irrawaddian epoch.

---

[1] *Rec. Geol. Sur. Ind.*, Vol. XXXVII, p. 229.

15. On a New Theorem in Elasticity.

By M. N. Saha. *M.Sc., Lecturer, Mathematical Physics, University College of Science, Calcutta.*

1. The Equations of motion of an elastic system are[1]

$$\begin{aligned}\rho\ddot{u} &= \rho X + \frac{\partial X_x}{\partial x} + \frac{\partial X_y}{\partial y} + \frac{\partial X_z}{\partial z} \\ \rho\dot{v} &= \rho Y + \frac{\partial Y_x}{\partial x} + \frac{\partial Y_y}{\partial y} + \frac{\partial Y_z}{\partial z} \\ \rho\dot{w} &= \rho Z + \frac{\partial Z_x}{\partial x} + \frac{\partial Z_y}{\partial y} + \frac{\partial Z_z}{\partial z}\end{aligned} \qquad (1).$$

Multiplying the equations by u, v and w. and adding, we have,

$$\because \; u\ddot{u} = \tfrac{1}{2}\frac{d^2}{dt^2}(u^2) - \dot{u}^2,$$

$$\frac{\rho}{2}\frac{d^2}{dt^2}(u^2+v^2+w^2) - \rho(\dot{u}^2+\dot{v}^2+\dot{w}^2)$$

$$= \rho(Xu+Yv+Zw) + u\left(\frac{\partial X_x}{\partial x} + \frac{\partial X_y}{\partial y} + \frac{\partial X_z}{\partial z}\right)$$

$$+ v\left(\frac{\partial Y_x}{\partial x} + \frac{\partial Y_y}{\partial y} + \frac{\partial Y_z}{\partial z}\right) + w\left(\frac{\partial Z_x}{\partial x} + \frac{\partial Z_y}{\partial y} + \frac{\partial Z_z}{\partial z}\right) \qquad (2).$$

Now multiplying by $(dx \, . \, dy \, . \, dz \, . \, dt)$, and integrating we have,

$$\because \text{ since } \iiint u\left(\frac{\partial X_x}{\partial x} + \frac{\partial X_y}{\partial y} + \frac{\partial X_z}{\partial x}\right) dx\,dy\,dz = \iint uX_n dS$$

$$-\iiint\left(X_x\frac{du}{\partial x} + X_y\frac{du}{dy} + X_z\frac{du}{dz}\right) d\Omega,$$

$$\iiiint_{t=o}^{t=\tau} \frac{\rho}{2}\frac{d^2}{dt^2}(u^2+v^2+w^2)\,dt\,d\Omega - \iiiint_{t=o}^{t=\tau} 2T\,dt\,d\Omega$$

$$= \iiiint_{t=o}^{t=\tau} \rho\,(Xu+Yv+Zw)\,dt\,.\,d\Omega$$

---

[1] Love's Elasticity, page 83.

$$+\iiint_{t=o}^{t=\tau}(X_n u + Y_n v + Z_n w)dS\,dt - \iiiint_{t=o}^{t=\tau} 2W\,d\Omega\,dt,$$

where

$$2W = X_x\,e_{xx} + Y_y\,e_{yy} + Z_z\,e_{zz} + X_y\,e_{xy} + X_z\,e_{xz} + Y_z\,e_{yz} \quad (3)$$

Denoting by $\overline{T}$ the time-average of kinetic energy per unit volume, and by $\overline{W}$ the time-average of the potential energy per unit volume, we have

$$\iiint(\overline{W} - \overline{T})\,d\Omega = \frac{1}{2\tau}\iiiint_{t=o}^{t=\tau}\rho\,(Xu + Yv + Zw)\,dt\,.\,d\Omega$$

$$+\frac{1}{2\tau}\iiint_{t=o}^{t=\tau}\rho\,(X_n u + Y_n v + Z_n w)\,dS\,dt$$

$$-\frac{1}{\tau}\iiint\left[\frac{\rho}{4}\,\frac{d}{dt^2}(u^2 + v^2 + w^2)\right]_{t=o}^{t=\tau} d\Omega \quad (4).$$

2. If we now take a closed volume Ω and $\overline{W}$, $\overline{T}$ denote the average values over time as well as over space, we shall have

$$\overline{W} - \overline{T} = \frac{1}{2\Omega\tau}\iiiint_{t=o}^{t=\tau}\rho\,(Xu + Yv + Zw)\,d\Omega\,dt$$

$$+\frac{1}{2\Omega\tau}\iiint_{t=o}^{t=\tau}(X_n u + Y_n v + Z_n w)\,dS\,dt \quad (5).$$

Since if τ be sufficiently large, the function $\frac{d}{dt}(u^2 + v^2 + w^2)$ will have the same value at the beginning and end of the process if the motion be vibratory, for then τ will contain a large number of periods.

3. The analogy of theorem (5) to Clausius's[1] Virial Theorem is quite evident. According to the virial theorem, we have

$$-T = \tfrac{1}{2}\,\Sigma\Sigma\,xX + yY + zZ,$$

where T = kinetic energy of the number of particles within unit volume,

---

[1] *Vide* Jeans' Dynamical Theory of Gases, Second Edition, page 141.

(X, Y, Z) = force components on the particle which occupies the point $(x, y; z)$.

4. A number of interesting applications are at once suggested.

Suppose the motion to be vibratory. Then if the body forces be nil, the average kinetic energy will be equivalent to the average potential energy if

(i) the surface tractions be nil, or constant, as in the case of the vibration of a supported rod, or plate with free ends,

(ii) the surface displacement be zero,

(iii) If part of the surface be under zero or constant stress and part under varying stress with no surface displacement (e.g. the case of a clamped rod, or string stretched between two points).

These theorems are of course well known, and can be deduced in other ways.

16. On the Pressure of Light.

By M. N. Saha, M.Sc., *Lecturer on Mathematical Physics*, and S. Chakravarti, B.Sc., *University College of Science, Calcutta.*

The object of the present paper is to describe a simple apparatus by means of which the pressure of light can be easily demonstrated, and qualitatively measured with the entire elimination of all sorts of disturbing effects. The materials required are not difficult to procure, and are readily available in all well-equipped laboratories.

We wish first to give a short history of the subject and a short sketch of the theory.[1] As early as the seventeenth century Kepler supposed that light exerted a pressure on surfaces on which it is incident. The hypothesis was called into being for explaining the tails of comets.

With the rise of Newton's corpuscular theory of light, the pressure no longer remained a guess, but could be deduced from that theory. An elaborate series of experiments for detecting the pressure were instituted by De Mairan (1754), and later on by Du Fay (1756). but the results were entirely negative. Later on, the failure of these experiments were used as arguments against the validity of the corpuscular theory of light.

But interest in the subject was again revived when Maxwell,[2] in the year 1873, predicted that even on the basis of the electro-magnetic theory of light, radiant energy should exert a pressure on a surface on which it is incident. But the amount of pressure is extremely small. It can be shown that if light consists of unidirectional rays, the pressure amounts to

$\frac{1}{c}$ (Amount of radiant energy falling on unit surface per unit of time, measured in absolute units), where c velocity of light, and the surface is a perfectly absorbing one, e.g. a surface coated with lamp-black.

If the surface on which the light is incident be perfectly reflecting, the pressure is just double. But if, on the other hand, the surface be transparent (e.g. glass), there will be no pressure at all, or more accurately a very small amount of pressure depending on the small amount of reflection from the glass surface.

---

[1] For the historical part, see Lebedew, Ann-d. Phys., Bd. 6, page 433; and Nichols and Hull, Phys. Rev., 1903.

[2] Maxwell, Electricity and Magnetism, Vol. II, page 792.

The occurrence of the term c in the denominator makes the pressure extremely small. Let us take for example the pressure exerted by solar light. The amount of energy which is delivered by the sun on unit surface placed normally to the rays of the earth is equivalent to 2·4 calories per minute. The pressure therefore

$$=\frac{2{\cdot}4\times 4{\cdot}2\times 10^{7}}{3\times 10^{10}\times 60\times 981}\text{ gms. weight}={\cdot}56\times 10^{-7}\text{ gms. weight.}$$

By using the arc, or a very high candle power filament lamp (1500 wt/½ wt. for example), and by concentrating the light by means of a lens of large aperture, the pressure can be increased to about 100 times But still it is extremely small.

It was for demonstrating the pressure of light that Crookes [1] was led to invent his famous "radiometer." As is well known, this consists of a delicate cross of glass or mica vanes suspended on a pivot and enclosed within a glass cylinder from which air can be pumped off at will The alternate faces of the vanes are covered with lamp-black. When light falls on the vanes it begins to rotate rapidly about the axis.

Crookes was inclined to explain this motion as being due to the pressure of radiant energy, but Zöllner [2] showed that the effect observed was rather spurious, and exceeded theoretical pressure by at least 10 [3] times. He showed that the effect was really due to the unequal heating of the two sides of the vanes.

Zöllner [4] tried to observe the effect by another arrangement. Two thin discs of silvered or blackened glass, or metal, were suspended at the ends of the horizontal arm of a thin cross of glass-rods and the whole was suspended by means of a glass fibres within a closed vessel, from which air can be pumped out at will. A galvanometer mirror is attached to the vertical part, with its plane at right angles to the plane of the vanes. But with light incident on the vanes, the deflection observed was very irregular, and sometimes was completely in the wrong direction.

But in spite of repeated failures to detect the pressure of radiation, theoretical investigation had, in the meantime, been advanced so far that it was not possible to deny its existence.

We have seen that the pressure of light was deduced by Maxwell from the electromagnetic theory of light. by using an argument involving the assumption of pressures and tensions across and along tubes of force. But Bartoli[5] showed in 1877 that the pressure could also be deduced by means of thermodynamic reasoning involving only the two laws of thermodynamics, and was in amount just the same as is obtained from Maxwell's theory. Bartoli's argument being based on the surer basis of thermodynamics, seemed to carry conviction in all quarters about the real existence of the pressure.

---

[1] Phil. Trans. 1874, Vols. 164, p. 501

[2] Pogg. Ann Bd. 160, p. 154, 1877 (suggested by Maxwell).

[3] Bartoli, Nuovo Cimento, 15, p. 195, 1883.

[4] Hull, Phys. Rev. May 1905.

The long-expected pressure was at last observed by Lebedew, and almost simultaneously by Nichols and Hull in 1901, by different modifications of Zöllner's unsuccessful experiment.

Lebedew's method was to replace the rather thick glass vanes by means of very thin platinum foils (diameter 5 mm., thickness ·02 mm.) whereby any difference of temperature on the two sides is instantly equalised. The radiometer action is directly proportional to the difference of pressure on the two sides, and the pressure of gas within the vessel. Lebedew reduced the pressure to about 1/20000th of a m.m. and was almost able to eliminate the radiometer action, and verify the pressure qualitatively to about 20% of the theoretical pressure.

The early experiments of Nichols and Hull were undertaken in order to investigate the different disturbing effects in the apparatus of Zöllner. They found that the total disturbing effect is the resultant of the following:—

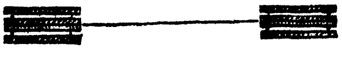
(i) the radiometer action—due to the unequal heating of the two sides of the vane;

(ii) convection currents—due to the rush of air towards the parts warmed by the passage of the pencil of rays;

(iii) a rocket action—due to the escape of particles of gas from the surface of the vanes when these are heated by the incident light.

By a series of elaborate investigations extending over three years, Nichols and Hull were able to get rid of these effects. They found that the convection effect could be reduced by making the vanes exactly vertical, for then the flow of air becomes tangential to their surface. The rocket action, and the radiometer action were found to balance at a pressure of 16·5 m.m., and deflections were therefore observed with this pressure in the vessel. The vanes were of thin glass with one face silvered; for further information on the point reference should be made to the original paper

Finally, Hull[6] evolved out an arrangement by means of which the disturbing effects could be entirely eliminated. The silvered side of a thin cover-glass was placed in contact with the blackened side of a similar glass and the whole was enclosed by means of two other thin glasses, as shown in the figure. Two such cells were mounted upon



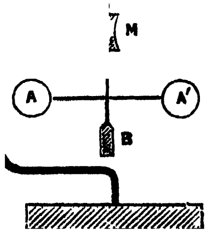
the opposite ends of the torsion arm which was suspended by means of a thin quartz fibre within a glass cylinder. When light falls on the vanes, the two sides are of course unequally heated. But as the air on the two sides is enclosed within a glass cylinder, it forms one single system with the glass vessel—action and reaction being equal, the radiometer action is entirely eliminated.

We have found the extra glass cell to be redundant. The silvered sides of two thin cover-glasses were put one upon the other and connected to each other by means of a trace of Canada balsam on the fringes. Similarly, we prepared a lamp-blacked surface. We have thus in these vanes very thin films of totally reflecting and totally absorbing material enclosed within equal thicknesses of glass on either side. When light previously filtered of all rays capable of heating glass, is allowed to fall on one of the vanes, say the silvered one, the glass surface is not at all heated by the passage of the rays, which have been previously passed through sufficiently thick glass lenses. The two sides of the film are instantly raised to the same temperature (because they are extremely thin and there being equal thicknesses of glass on the two sides, they are equally heated by conduction). Thus the radiometer action is entirely eliminated.

It will be thus seen that in our arrangement we have combined the arrangements of Lebedew as well as Hull's method, without the additional encumbrance of extra glass cells.

DESCRIPTION OF THE APPARATUS.

The vanes were suspended on the opposite arms of the torsion balanc : *evide* fig. 2. (*m*) is a galvanometer mirror placed at right angles to the plane of the vanes, with a small piece of steel on its back. (B) is a small brass weight for steadying the balance. The whole is suspended by means of a glass fibre and enclosed within a bell-jar which is connected to a pump and a manometer The deflection is observed from the excursion of a spot of light reflected from (*m*) in the usual lamp and scale arrangement. The dimensions are



Diameter of the cover glasses = 1·8 c.m.
Thickness of the cover glasses = ·083 mm.
Weight of the silvered vane = ·105 gm.
Weight of the lampblacked-vane = ·128 gm.
Length of the arm = 2 c.m.
Weight of B = ·5 gm.

The pressure within the bell-jar is reduced to about 1 to 2 cms. of mercury. It is extremely important that the joints should be all air-tight, for the slightest leakage of air may produce disastrous effects. After pumping out we allowed the apparatus to stand for 3 days in order to be sure that it was quite air-tight. The vanes should be placed symmetrically just about the centre of the glass vessel, otherwise currents of air which are set up in the vessel by the passage of rays and turned off by the sides of the vessel may produce disturbing effects. These effects become smaller, the smaller the pressure inside the vessel.

Theory of the Apparatus :—

The equation of motion of the vanes is given by—

$$I\frac{d^2\theta}{dt^2}+k\frac{d\theta}{dt}+\mu\theta=L \qquad \text{(i)}$$

where (I) moment of inertia of the system about the fibre, k viscosity factor, μ is the torsional coefficient. θ = angle of rotation, L moment of the force of pressure about the axis of rotation (i.e. the fibre).

The solution is $\left(\theta-\frac{L}{\mu}\right)=Ae^{-\frac{k}{2I}t}\cos(nt+a)$ (ii)

where $$n^2=\frac{\mu}{I}-\frac{k^2}{4I^2} \qquad \text{(iii)}.$$

After a sufficiently large time the deflection should become steady if the disturbing causes are entirely absent. Let α denote this steady deflection.

Now $L=pl$, where p = total pressure (or thrust) on the surface and l = distance of the centre of the disc from the axis of rotation. The light should be concentrated on the centre of the disc. Let α be the steady deflection. Then

$$p\doteq\frac{\mu\alpha}{l}.$$

The constant μ is obtained from observations of the free period of oscillation of the system.

From (ii) we see that $\frac{\mu}{I}=n^2+\frac{k^2}{4I^2}$.

Now $n = \frac{2\pi}{T}$, and $\frac{k^2}{4I^2} = \left(\frac{\beta}{T}\right)^2$, where β = logarithmic decrement of the amplitude.

$$\therefore \frac{\mu}{I} = \left(\frac{2\pi}{T}\right)^2 + \left(\frac{\beta}{T}\right)^2 = \frac{1}{T^2}(4\pi^2 + \beta^2) \qquad \text{(iv)}.$$

Now I can be easily calculated from the weight and the dimensions of the system. μ can therefore be easily calculated from formula (iv).

In our experiment $l = 2{\cdot}65$ c.m. and $\alpha = 6{\cdot}27 \times 10^{-5}$ so that a deflection of (1 mm.) at a distance of 1 metre corresponded to a total pressure of

$$\frac{6{\cdot}27 \times 10^{-5}}{2{\cdot}65} = 2{\cdot}36 \times 10^{-5} \text{ dynes.}$$

The time period was 32 seconds and the logarithmic decrement was $\beta = {\cdot}310$, and $I = 1{\cdot}67$ units.

MEASUREMENT OF ENERGY.

Owing to lack of means at our disposal the amount of energy falling upon the surface could not be properly measured. Lebedew allowed the light to fall on a copper calorimeter placed in the same position as the vanes, and the amount of energy absorbed was obtained by noting the rise in temperature of the calorimeter within a given period of time.

Nichols and Hull's method was more ingenious. A thin disc of silver of the same size as the vane was coated with lampblack. Two holes were bored on the sides through which a copper-constantan couple passed. The other end of the couple passed through a sensitive galvanometer. This apparatus was previously standardised by putting it in different baths. The light was allowed to fall on the disc for some time and the rise in temperature was obtained from the throw of the galvanometer.

The source of light in Lebedew and Hull's experiment was an arc which as is well known is very unsteady. In our early experiments we used the arcs but in the latest experiment the source of light was a (3000 c.p.) Tungsten filament lamp supplied by Messrs Westinghouse & Co. The light from this source is very steady. The lamp was placed in a horizontal position (i.e. with its filament in a vertical circle) at a distance of 50 to 70 cms. from the diaphragm which contained a short focus lens of 6·5 cms. apperture. By adjusting the lens the filament was completely focussed on the vanes. An upper limit to the amount of energy falling on the vane per second can be thus obtained. By means of an ammeter we found that the lamp consumed a current 6·6 amps under a pressure of 220 volts. The amount of energy passing through the lens and focussed on the vanes is therefore given by

$$\frac{220 \times 6 \cdot 6 \times 10^7}{4\pi (d)^2} \pi (3 \cdot 25)^2 \text{ ergs per sec.}$$

The whole pressure on the silvered surface is therefore

$$\frac{E}{c} (1 - \epsilon) (1 + \rho)$$

where c velocity of light and ϵ = fraction of energy absorbed by and reflected from glass surfaces (lens and containing vessels) and ρ = fraction of energy reflected from the silvered face.

RESULTS OF OBSERVATIONS.

In our preliminary blank experiment with the arc, we found that for the period for which the arc remains steady, the deflection remains quite steady and follows very faithfully the fluctuations of the arc. When the positive pole was focussed the deflection observed was generally 3 to 4 times the deflection for the negative pole. When all the precautions above mentioned were taken, the deflection was found to be always in the right direction. When the filament lamp was used as the source of light, all irregularities due to the variation of the source of light vanished. As soon as light is struck, the spot of light slowly creeps up towards the new position of equilibrium about which it oscillates in accordance with the equation (i).

Ultimately the oscillation dies away and the spot becomes quite steady, which could be maintained for 15 minutes (we did not try to keep the spot steady for a greater length of time because the tungsten filaments, being kept in a horizontal position, are gradually deformed on account of their plasticity at the high temperature within the lamp.

In one set of experiments one of the vanes was silvered while the other consisted of two clear pieces of microscopic cover glass. We found that when light was allowed to fall on the clear glass surface there was practically no deflection. In another set of experiments one of the vanes was silvered and the other was lampblacked. It was found that generally if the source of light was not too intense, the deflection of the black surface was approximately one half of that of the silvered one. If the source of light was very intense so much heat was absorbed that the junctions (which were all of shellac) melted off. Quantitative experiments were therefore impossible with that surface.

One of the results of our quantitative experiments is given below:—

Mean deflection (mean of several experiments) = 28·5 Divns.
Distance of the scale from the mirror = 100 c.m.
Distance "d" of the plane of the filament from the diaphragm. = 73 c.m.

Therefore the upper limit of the total theoretical pressure (without allowing for absorption or reflexion) is equal to

$$2 \times \frac{6{\cdot}6 \times 220 \times 10^7 \times (3{\cdot}25)^2}{4 \times 73^2 \times 3 \times 10^{10}} = 4{\cdot}8 \times 10^{-4} \text{ dynes} \qquad \text{(A)}$$

The pressure calculated from deflections is equal to

$$2{\cdot}3 \times 10^{-5} \times 14{\cdot}25 = 3{\cdot}33 \times 10^{-4} \text{ dynes} \qquad \text{(B)}.$$

The observed pressure is about 70 per cent of the expression (A), which is the pressure calculated on the supposition that the whole amount of energy given out by the filament is freely transmitted by the various glass media, and is totally reflected by the silvered surface. As a matter of fact, none of these assumptions is correct. If T is the fraction of total energy transmitted by thick glass, and ρ be the reflecting power of a silver glass-surface the actual pressure should be

$$P_0 \frac{T}{2} (1 + \rho)(1 - \epsilon)$$

where P_0 is the quantity (A).

According to the experiments of Rubens and Hagen[1] $\rho = 90{\cdot}5\ \%$ unfortunately no data is available for the transmission coefficient, but on account of the preponderance of rays of short wave length in the spectrum of the light from a tungsten filament, it cannot be less than 80%

Considering these facts, we are probably justified in asserting that the agreement between observed and theoretical values is at least qualitatively quite good On a future occasion we hope to return to the problem of a rigorous quantitative determination of total incident energy.

In conclusion, we beg to record our best thanks to Prof. C. V. Raman, and the teaching staff of the University College of Science, for the interest they have taken in the work; and to Mr. N. Basu, B.Sc., for much useful help.

---

[1] Obtained by extrapolation from the data of Rubens and Hagen on the supposition that the maximum emission of energy from a tungsten filament is at 1 μ [Kohlrausch, Praktische Physik, Tabellen].

17. Considerations regarding a possible relationship between the Charnockites and the Dharwars.

By E. W. Vredenburg.

[Published with the permission of the Director, Geological Survey of India.]

INTRODUCTION.

Charnockite, as originally defined by Sir Thomas Holland from the type occurrences at St. Thomas' Mount and Pallavaram, south of Madras, is a hypersthene granulite with the chemical composition of a granite.[1]

Further study has indicated that the form originally described is an exceptional highly siliceous phase of a series of rocks of normal igneous composition including every gradation from acid to basic, or even ultra-basic. In spite of these differences of composition, all these rocks are linked by certain petrological characters, foremost amongst which are the presence of enstatite and usually of garnet. a granulitic structure, and a schillerized condition of the minerals expressed by the presence of microscopic inclusions which communicate a peculiar dark colour to the normally colourless or pale tinted minerals quartz and felspar, thus accounting for the dark-grey to black colour and uniformity of appearance exhibited by these rocks in spite of wide divergences in mineral composition. In spite of this schillerized condition, the remarkable freshness of the minerals constitutes another characteristic feature of the Charnockites.

It seems well established that the acid and ultra-basic phases occur in relatively very small proportion. The name "Charnockite", as denoting a definite rock species, is strictly applicable only to the highly siliceous rock with a chemical composition corresponding with that of granite. Nevertheless, to express the fact that some kind of relationship connects all these rocks in spite of their varying composition, they were grouped together by Holland as the "Charnockite Series." (1900, Mem., Geol. Surv. Ind., Vol. XXVIII, p. 119).

Leaving aside the exceptional acid and ultra-basic phases, it cannot be stated, from the information at present available, whether the bulk of the formation may be of an "intermediate" composition corresponding with that of diorite or andesite, or whether it is more generally basic and nearer in chemical composition to basalt, or whether both types are equally abundant. In some instances, such as in the case of the Shevaroy hills, it has been ascertained that the prevailing form is the "intermediate."

---

[1] 1893, Journ. As. Soc. Bengal, Vol. LXII, p. 162.

Judging from the chemical composition of its members, it is evident that the Charnockite Series consists of igneous rocks. Unfortunately, there is very little precise information available regarding the field-relations of these rocks. Their variation in chemical composition might be attributed to magmatic differentiation, but their mineral composition, as far as the actual mineral species are concerned, is not that of any of the normal unaltered types either plutonic, hypabyssal, or volcanic, of the ordinary igneous series, and their uniform characters, amidst a wide range of chemical composition, point, if not to a common origin, at any rate to certain special agencies that have affected them all in a uniform manner.

Holland has recorded instances of basic dykes traversing the biotite-granitic gneiss or Fundamental Gneiss in Coorg, which have been referred to the Charnockite Series This observation, while establishing the intrusive character of such minor occurrences as fissure-dykes, leaves us in the dark concerning the real nature of the larger masses

The amount of additional information directly concerning the geology of the Charnockites that has been gathered since the time of Holland's original discoveries and investigations is not very great: nevertheless, some useful purpose may perhaps be accomplished by once more enquiring into the matter in the light of recently acquired knowledge regarding some of the more general problems connected with the Archæan geology of India

The problem may be attacked from two points of view, the petrological and the stratigraphical.

ROCKS APPARENTLY INTERMEDIATE IN THEIR CHARACTERS BETWEEN THE DHARWARS AND CHARNOCKITES.

From the petrological point of view, a great deal of light has been thrown on this question by the researches of the members of the Mysore Geological Department. Foremost among these must be mentioned W. F. Smeeth's remarkable investigations upon the development of secondary augite amongst the epidioritic schists of the Kolar band of Dharwars (Bull. No. 3, 1905, Mysore Geol. Dept.). The mineral was first discovered in 1901 by Holland who regarded it as probably referable to malacolite (diopside), and who also recognised its secondary nature (Mem., Geol. Surv. India Vol. XXXIII, p. 78). It is a monoclinic pyroxene, occurring as a further development by recrystallisation of the secondary uralite of the epidioritic schists. It often shows a poikilitic structure and has crystallised in much larger grains than the amphibole from which it is derived.

The importance of Holland and Smeeth's investigations with reference to the question under consideration is that they show us a schist caught, so to speak, in the very act of transformation into a granulite The complete transformation on a large scale of the Kolar schists into typical granulites has been thoroughly established by Smeeth's researches.

The granulites constituting the commonest types of the Charnockite Series include, as their commonest constituents, the following minerals: felspars of all species, hornblende, monoclinic and rhombic pyroxenes, quartz, biotite. magnetite, ilmenite, pyrites. Garnets are frequent in most types, while small quantities of zircon and apatite are usually observed

The constituents of the altered Kolar schists are actinolite (uralite), plagioclase, secondary monoclinic pyroxene, brown and white mica, quartz, iron ores (largely pyrites), sphene, calcite, zoisite (or clinozoisite). Garnet is rare or absent in the altered schists of the Kolar band, but occurs abundantly in similar altered Dharwarian rocks in many parts of Mysore (Smeeth, *loc. cit.*, pp. 29-30). Except for the absence of rhombic pyroxene and the presence of sphene, the mineral constitution of the altered Kolar schists is generally, therefore, not unlike that of the commoner types of Charnockite.

The constitution of the altered Kolar schists, especially in their thoroughly granulitic form, indicates a possible path through which all the characteristics of the Charnockite rocks could be ultimately acquired: their mineral constitution, their granulitic structute, the freshness of the minerals, all of which have been formed anew through secondary influences.

It is therefore worth while to keep in mind the possibility that a granulite of the type of the Charnockites might originate from andesitic or basaltic rocks by complete re-crystallisation without real fusion. The intense pressure accompanying the complete re-crystallisation of the rock would also account for the characteristic schillerization of all its constituent minerals.

Holland and Smeeth's remarkable investigations amongst the Kolar schists have revealed a rock which may be regarded as a first step in the passage from an epidiorite to a Charnockite. A complete set of intermediate stages would afford more convincing proof of the possibility of the transformation than is afforded merely by the Kolar rocks. Such a complete series has not yet been worked out. Nevertheless, other rocks are known from Southern India, which, like the pyroxenic Kolar schists, may also represent steps in this transformation.

In the first place, it is necessary to mention the Pseudo-Charnockites, first described by Jaya Ram (1907, Rec., Mys Geol. Dept., Vol. VI, pt. 2, p. 51), consisting of fresh augite hornblende, plagioclase, quartz, clear sphene, epidote, apatite, which constitute one of the members of the Attikuppa belt of Dharwar rocks in southern Mysore, occupying the country between Attikuppa and the Hemavati river, a tributary of the Cauvery. In this Dharwar belt, the most abundant rocks, together with the Pseudo-Charnockites, are Gray-stones ("pot-stones" and related rocks), associated with hornblende-granulite-schists resembling the Kolar schists

The above observations are of the greatest interest and importance, for, associated with rocks resembling the Kolar schists which already seem to represent a first step towards the transformation of epidiorite into Charnockite, we find a considerable development of beds still more closely resembling the Charnockites, occurring as genuine members of a Dharwar belt. It is further worthy of note that, of all the important Dharwar outcrops of Mysore, the Attikuppa belt and the neighbouring Mallappanbetta band are those situated nearest to the Coorg belt of Charnockites

Of interest also are the Quasi-Charnockites (Jaya Ram, 1909, Rec., Mys. Geol. Dept , Vol. VII, pp. 13, 79), bands and lenses of basic hornblende diorite, surrounded by the Fundamental Granitic Gneiss situated some eight or ten miles north of the northern limit of the Nilgiri Hills (themselves a great mass of Charnockites), in the region south and south-west of Gundlupet (11°47′ ; 76°44′). They consist of hornblende, felspar, ilmenite and apatite, similar in their characters to the same minerals as developed in the typical Charnockites which they further resemble owing to the absence of sphene. They do not, however, contain any rhombic pyroxene.

Holland has noticed that the secondary augite of the Kolar schists is generally accompanied with the permeation of the rock by granitic, or at least acidic, material, a point which has been repeatedly insisted upon by Smeeth. The metamorphosed rock is therefore less basic in composition than the original epidiorites. This observation will be again referred to in the sequel of the present note.

The above-quoted discoveries and investigations conclude about all that is known at present in the petrological part of our enquiry as pointing out a possible origin of the Charnockites. They very clearly point at least to the possibility that the Charnockites may represent a more intensely metamorphosed facies of the epidiorites which constitute so large a proportion of the Dharwars.

STRATIGRAPHICAL RELATIONSHIPS OF THE CHARNOCKITES.

If we now turn to the stratigraphical evidence, that afforded by the detailed work of the Mysore Geological Department is unfortunately of very limited avail ; the great expanse of the

South India Charnockites is situated almost entirely outside the limits of the Mysore State into the southern border of which the Charnockites encroach only to a very limited extent, being represented only by the eastern fringe of the Coorg belt and the western fringe of the Coimbatore belt. Yet, even in the limited extent to which these rocks penetrate into Mysore territory, their distribution exhibits features of great interest. It is obvious at the first glance that the Dharwar and the Charnockite series are mutually exclusive ; where the one stops, the other commences, and *vice versa.* Although the outcrops of both series approach quite close to one another, the passage from the one to the other is irrevocable Truly typical Dharwars have nowhere been observed, in Mysore, in the typical Charnockite area, while not a single outcrop of Charnockite has been described in the Dharwar area. Where the two great areas come nearest to one another, small patches, in the published surveys, have been ascribed to the one or to the other in such a manner as to convey the impression that the surveyors experienced some perplexity in deciding to which of the two series they should ascribe some of the smaller outliers.

A narrow band consisting largely ot quartzites, referred to the Dharwars has been mapped by Middlemiss as penetrating the Charnockite outcrop of North Coimbatore. It will be referred to again in the sequel of this note. In this connection allusion may be made once more to the Pseudo-Charnockites forming an essential portion of one of the Dharwar belts situated nearest to the Coorg belt of Charnockite, as well as to the Quasi-Charnockites which might be regarded as northern outliers of the Nilgiri Charnockite belt, or as western outliers of the Coimbatore Charnockite belt; both the Pseudo-Charnockites and the Quasi-Charnockites being situated near to the mutual limit of the areas exclusively characterised respectively by Dharwars and by Charnockites.

The shapes of the Charnockite outcrops, whenever surveyed with sufficient closeness of detail, exhibit outlines quite similar to those of many Dharwar outcrops.

Both series give rise to just the same type of topography, the Dharwar outcrops, whenever sufficiently massive, forming hills similar in appearance to those formed by massive outcrops of Charnockite. For instance, the lofty Bababudan hills of Dharwar rocks are just of the same general type as the Shevaroys or Palnis of Charnockite rocks.

In short, a careful examination of the admirable geological map published by the Mysore Geological Department forcibly conveys the impression that the Charnockites and Dharwars may be vicarious, that the Charnockite Series may be a facies of the Dharwar Series.

None of the great Charnockite masses of Southern India have been surveyed in detail. In the Coimbatore district, the main outline of a spread of Charnockite, the fringe of which penetrates into Mysore territory, has been surveyed by Middlemiss, but no detailed account has been published.

In the early part of 1917, I had occasion to visit a portion of the Trichinopoly district in company with Mr. Bosworth Smith, one of the geologists most conversant with the Indian Archæan. I had never, until then, had occasion of actually observing the Charnockite Series in the field, and I take this opportunity to thank Mr. Bosworth Smith for the gracious manner in which he explained to me the characters of various outcrops of these rocks. The region in question is the neighbourhood of Palni and Dindigul north of the Palni Hills. The area situated north of the Palni range is largely in the condition of a high-level plain occupied mostly by the Archæan biotite-gneisses. The plain is traversed at intervals by narrow elongate ridges stretching for distances often of many miles, consisting principally of Charnockite. The rocks are undoubtedly bedded, and dip generally at high angles as is usual in the case of Archæan rocks. The clearly bedded structure is quite different from the cleavage of a schist or the banding of a gneiss. Structurally these outcrops are quite similar in character to many narrow bands of Dharwar rocks.

I had no opportunity to visit the Palni range, a large mass known to consist principally of Charnockites. As seen from a distance, the structure is again undoubtedly stratified, distinct beds being traceable for considerable distances across spur after spur, while scarps and dip-slopes, and large-scale curvatures of the strata are exhibited with a distinctness which unmistakably indicates that the rocks are truly stratified.

One of the most characteristic members of many Dharwar outcrops in Southern India is a banded siliceo-ferruginous rock varying, according to the degree of metamorphism, from a hæmatitic jasper to a quartz-magnetite schist frequently accompanied by cummingtonite. These rocks have, by some geologists, been regarded as volcanic flows of abnormal composition, while others have assigned to them an entirely secondary and metamorphic origin. They are just as abundant in many outcrops of the Kadapah, Gwalior or Bijawar series, intermediate in age between the Dharwar and Cambrian. These Kadapah-Bijawar rocks are often quite unmetamorphosed and there is not the slightest doubt that the banded ferruginous jaspers are truly interbedded, and that, moreover, they have been deposited in water. It is quite true that, in these newer beds, just as in the Dharwars, they are frequently associated more or less directly with basaltic flows, and may be, therefore, more or less indirect products of volcanic activity; owing their origin perhaps to deposition from water holding silica in solution such as is observed, on a minor scale, in certain hot-springs in volcanic regions at the present day. The rocks of

Cambrian and later age, contain nothing that resembles these vast spreads of banded ferruginous and siliceous rock so frequent in many pre-Cambrian formations, and they seem to have originated from certain agencies that were active only at early periods of the earth's history. The main point in connection with the present enquiry is that they are truly interbedded and truly contemporaneous with the strata with which they are associated, and that no one who is familiar with the rock in its unmetamorphosed condition, as exhibited in the exposures of the Kadapah, Gwalior, or Bijawar series, could admit that the more or less metamorphosed but essentially similar rocks so frequent in the Dharwars, have had a different origin.

Now, these banded siliceo-ferruginous rocks, so characteristic of many outcrops of the Dharwar Series are equally abundant in many outcrops of the Charnockite Series. Instances are observed actually in the small fringe of the Charnockite series represented on the published geological map of Mysore, and it has been necessary, in the index to that map, amongst the sub-divisions of the Dharwars, after the words "Banded terruginous quartzites and iron-ores", to insert a parenthesis with "a few of Charnockite age", the Charnockite Series being regarded by the Mysore geologists as differing in age, and as newer than the Dharwar Series.

A particularly convincing instance is that of the large group of Charnockite masses of the Salem region, which have come to be known collectively as the Shevaroy group of hills, where numerous narrow runs of the siliceo-ferruginous banded rock, uninterrupted for miles, traverse the Charnockite outcrops in such a manner as to indicate, from the available maps and descriptions, that the two rocks are undoubtedly interbedded, some of the most characteristic ferruginous bands, remarkable for the enormous length of their outcrop, being particularly noticeable in the Tainanda and Kolymullay hill-masses. (See King and Foote, "On the Geological Structure of Parts of the Districts of Salem, Trichinopoly, Tanjore, and South Arcot, in Madras Presidency," Mem. Geol. Sur. India, Vol. IV, pt. 2, 1864.)

As regards Southern India, we now find that, while the petrological evidence encourages the possibility of regarding the Charnockites as intensely metamorphosed Dharwars, the stratigraphical evidence may be summarised as follows:—

Firstly. In their regional distribution, the Charnockites and Dharwars succeed and exclude one another in such a manner as to indicate that they may represent two phases of the same system.

Secondly. The outlines of the Charnockite outcrops and the physical features which these rocks constitute correspond with those exhibited by the Dharwars.

Thirdly. The rocks, in some of the most important

Charnockite outcrops are as distinctly bedded as in the case of the Dharwars.

Fourthly. The banded siliceo-ferruginous rocks so characteristic of the Dharwars and so abundant in some of their outcrops are equally abundant in some important outcrops of the Charnockites with which they are similarly interbedded.

All these facts seem to point clearly to one conclusion: that the Charnockites may be the same rocks as the Dharwars, differing only in their mode of metamorphism.

ASSOCIATION OF THE CHARNOCKITE AND KHONDALITE SERIES.

In the north-eastern portion of the Peninsula, in Kalahandi along the borders of Orissa, in Ganjam, in the Vizagapatam hill-tracts, there occur extensive outcrops of Charnockites accompanied by quartz-sillimanite-schists with garnet and graphite, which, in 1902, were described by T. S. Walker as "Khondalites" (Mem. Geol. Surv. India, Vol. XXXIII, pt. 3, p. 11). The intimate structure of the Khondalites is essentially similar to that of a granulite. The rock is totally different mineralogically from Charnockite, but the disposition of its constituent mineral grains is quite comparable, keeping in mind, of course, the essentially different structure of a fibrous mineral like sillimanite as compared with many of the characteristic minerals of Charnockite. The disposition of the minerals is sufficiently similar in both rocks to favour the supposition that both have been through the same stages of metamorphism. The available maps of the above-mentioned regions indicate for the Charnockites just the same kind of ribbon-shaped elongated outcrops as for the Khondalites, and the outcrops of both kinds of rock alternate variously. If the form of outcrop of the Charnockites were interpreted as indicating for them an intrusive origin, the same might as well be admitted for the Khondalites. There seems to be no doubt that the latter are intensely metamorphosed impure quartzose clays or slates, and, for them, an intrusive origin, though advocated, for essentially similar rocks, by the geologists of the Mysore Geological Department, is therefore inadmissible. They must clearly be interpreted as bedded rocks, and, so far as available evidence goes, there is no reason for refusing to admit an originally stratified structure for the bulk of the associated Charnockites.

In Southern India, the Archæan strata, as represented by the Dharwars in their type-outcrop, are essentially igneous, consisting principally of vast accumulations of metamorphosed volcanic rocks. In other parts of India, the representatives of the Dharwars frequently contain considerable intercalations of sedimentary rocks. The possible identity of the Khondalites with some of the sedimentary representatives of the

Dharwars has seldom been alluded to, presumably because the highly metamorphosed condition of the Khondalites communicates to them an appearance greatly differing from that of the possibly corresponding less metamorphosed Archæan sediments of Dharwar age. Just as, in Southern India, there is good reason to regard the Charnockites as intensely metamorphosed representatives of the igneous members of the Dharwar system, so, in the eastern portion of the Peninsula does it seem quite plausible to regard the Khondalites as intensely metamorphosed representatives of the sedimentary members of the Dharwars. Just in the same way as, in Southern India, the Dharwars and Charnockites mutually exclude one another, so in the north-eastern portion of the Peninsula is there a similar mutual exclusion of the Khondalites and of the more typical sedimentary Archæans. Typical Khondalites have never been described in immediate juxtaposition with ordinary slaty Archæans, while conversely, ordinary sedimentary Archæans have never been observed in the midst of a typical area of Khondalites.

Just as, in Southern India, the pyroxene-bearing Kolar schists establish a link between the ordinary Dharwar epidiorites and the typical Charnockites, so do we find, in many regions of the Peninsula, instances of sedimentary Archæan rocks of generally the same age as the Dharwar, which have not reached that stage of metamorphism that would entitle them to be ranked as typical Khondalites, and in which, nevertheless, sillimanite has already been developed. They are, in fact, intermediate in character between the ordinary slaty Archæans and the typical highly metamorphosed Khondalites.

Two such occurrences may be specially selected on account of their undoubted connection with rocks interpreted as Dharwars

Firstly. South-east of Raurkela, towards Mandaijodi, Gangpur State, sillimanite occurs as an accessory mineral, with accessory epidote, in a rock consisting of pale-green amphibole and pink garnet, both enclosed in a matrix of granular quartz, forming a band eight inches thick in the midst of argillites regarded as of Dharwar age, and interpreted as an altered sedimentary rock (Maclaren, Rec. Geol. Surv. India, Vol. XXXI, p. 71.)

Secondly. At Bensibetta, in North Coimbatore, sillimanite occurs abundantly in a mass of green, somewhat schistose, north and south striking quartzite, with also much kyanite, and some rutile and fuchsite; the same sillimanite-bearing rock also occurring at Satyamangalam and several intermediate localities (Middlemiss and Hayden, Mem. Geol. Surv. India, Vol. XXXIII, pt. 2, p. 59).

Some of the occurrences of this latter group correspond precisely with the narrow band of Dharwars already referred to, which has been mapped as penetrating the Charnockite outcrop of North Coimbatore. If we agree to the Dharwarian age of these rocks and nevertheless regard the Dharwars and Charnockites as unrelated to one another, we are driven to accept the anomaly of a Dharwar outcrop of exclusively sedimentary origin (or at least consisting of rocks which most geologists would be inclined to look upon as sedimentary) occurring close to the Mysore region in which the Dharwars are almost exclusively igneous. If, on the contrary, we regard the Charnockites as derived from metamorphosed Dharwars, the anomaly disappears, for the Charnockites. in North Coimbatore, are much more abundant than the presumably sedimentary representatives of the Dharwars. The association of both types would merely therefore become once more that of interbedded sedimentaries and volcanics in which the latter vastly preponderate.

Even in the Dharwars of the Mysore region itself, in spite of the almost exclusive prevalence of igneous rocks, the corundum-bearing rocks which, on any intelligibly consistent petrogenic theory, it is impossible to regard as otherwise than directly or indirectly related to sedimentary rocks. frequently contain sillimanite.

It seems thus, from independent evidence, that the Charnockites may be regarded as intensely metamorphosed representatives of the igneous members of the Dharwars, the Khondalites as intensely metamorphosed representatives of their sedimentary members. The close association of Khondalites and Charnockites in Vizagapatam, Ganjam and Kalahandi would therefore have nothing to surprise us, as it would simply represent an alternation of volcanic and sedimentary beds. On the supposition that the Charnockites are exclusively intrusive, it would seem strange that they should so persistently accompany the Khondalites throughout a length of probably not less than 300 miles, between the Godavari and Mahanadi. The relationship becomes perfectly intelligible when they are both regarded as members of one bedded series. The reappearance of the association of Charnockites and of quartz-sillimanite schists in so far off a region as Ceylon also thereby becomes quite intelligible, while, again, supposing that the Charnockites are essentially intrusive, the coincidence becomes almost inexplicable.

In the south of the Mysore State, in the region of Malvalli and Maddur, near the north-western fringe of the Coimbatore belt of Charnockite, rocks apparently related to the Khondalites, and consisting sometimes of quartz, felspar, and garnet, sometimes of quartz and sillimanite, all of which are classified by the Geological Department of Mysore as "alaskites", occur in more or less direct connection with the Charnockites of which they are regarded by the Geological Department of Mysore as ultra-acid representatives (Slater, Rec. Mys. Geol. Dept., Vol.

VIII, p. 65). This interpretation would be about equivalent to admitting that the Charnockites and Khondalites might be igneous differentiates of one magma. The chemical composition, entirely corresponding with that of a normal primary igneous rock without the slightest influence of sedimentary adjuncts in the case of the Charnockites, entirely corresponding with that of a sediment in the case of the Khondalites, is opposed to such an interpretation. The frequent, almost constant association of both types is a geological fact to be reckoned with, and for which a suitable explanation must be sought, and it seems, for the present at least, that the suggestion here offered, that they are alternating members of a stratified series, partly volcanic and partly sedimentary, best suits the recorded facts.[1]

The most westerly outlier of the Kalahandi type-outcrop of Khondalites is Gandamardan or Narsingnath hill in the Borasamar Zamindari of the Sambalpur district (F. H Smith, Gen. Rep. Geol. Surv., 1899-1900, p. 157). Perfectly typical Dharwars occur some twenty miles to south-west and thirty miles to north-west of this hill. The latter constitute the Sonakan Series surveyed by F. H. Smith (1899 Gen Rep. for 1898 99, p. 39) in the Chhatisgarh area. The Sonakan beds constitute an outcrop of greatly crushed rocks of Dharwar character, described by Smith as consisting of clay-slates, argillites, siliceous hornstones, hornblende-schists, felsites, bands of conglomerate and boulder beds. and local subordinate beds of quartz-magnetite-schist. They are regarded by Smith as a continuation of King's Chilpi-Ghat beds and Ball's Sakoli beds.

There seems little doubt that the Khondalites of Gandamardan are the highly metamorphosed representatives of the clay-slates and argillites of the Sonakan series, the hornblende-schists of which would correspond with the Charnockites accompanying the Khondalites.

The profuse association of sillimanite-bearing schists with the Charnockites of Vizagapatam, Ganjam, and Kalahandi, their relative scarcity in some of the Charnockite outcrops of

---

[1] I have formerly adhered to the opinion, still held by some geologists, that the Archæan crystalline schists of non-igneous composition are not sedimentary in the true sense, but are chemically formed rocks derived from the condensation of the primordial atmosphere. On this hypothesis, many of the crystalline schists would have a quasi-igneous origin, though they still could not be regarded as differentiates of a genuine normal igneous magma. The entire trend of recent research goes to show that, with the exception of some subsidiary rocks such as the banded iron-ores, the immense majority of the stratified pre-Cambrian rocks are ordinary igneous (volcanic) and sedimentary rocks and have been formed in the same manner as the bedded formations of later ages, their specially characteristic crystalline features being entirely due to metamorphism.

Southern India now becomes readily intelligible. In the Dharwar area adjacent to the Charnockite area of Southern India, the Dharwar Series is represented almost solely by its igneous members; consequently, most of the rocks representing its intensely metamorphosed facies, in the Charnockite Series, are also igneous. In the north-eastern portion of the Peninsula, the Dharwars consist of alternations of igneous and sedimentary strata; their intensely metamorphosed representatives in that same part of the Peninsula, consist of alternations of igneous Charnockites and sedimentary Khondalites.

Reference may be made once more to the conclusions independently arrived at, both by Holland and by Smeeth, as to the secondarily enhanced acidity of those parts of the Kolar schists in which secondary pyroxene has been developed, accompanied, in many instances, by a granulitic structure. If the typical Charnockites are regarded as an extreme phase of metamorphism of the igneous members of the Dharwars, they may largely correspond with regions affected to a considerable degree by the permeation of acid material. This would explain how, at least in some instances, the average of some great masses of Charnockite, like that constituting the Shevaroy hills proper, is less basic than the average of the typical Dharwars.

Turning our attention to the Khondalites, we may notice the Bezwada Gneiss in which the Khondalites have been extensively permeated by felspathic material apparently of foreign origin; this may help us to understand how acid permeation, on a large scale, might also have affected the igneous members of the Dharwars, and contributed to their transformation into Charnockite.

It is significant perhaps that the Coimbatore outcrop of Charnockites, the northern fringe of which appears to be sufficiently granitic-looking to have deserved the name of Sivasamudram Granite (Jaya Ram, 1907, Rec. Mys. Geol. Dept., Vol. VI, pt. 2, p. 45), occurs along the line of the largest known spread of apparently intrusive granite in Southern India. This is a belt of granitic rock with an average width of over twenty miles, which traverses the more gneissose forms of the Fundamental Gneiss from north to south across the whole of Mysore Territory In its southern portion it is known as the Closepet-Channapatna Granite (see Smeeth, Rec. Mys. Geol. Dept., Vol. III, pp 24, 25; Slater, *id.*, Vol. VIII, p. 62). Towards the northern limit of Mysore State it is known as the Molakalmuru Granite (Sampat Iyengar, 1907, Rec. Mys. Geol. Dept., Vol. VI, pt. 2, p. 58), and its strike veers to north-west into the Bellary district where the exact details of its continuation have not been recorded. It is described as massive, coarse-grained, sometimes porphyritic, usually grey, sometimes pink consisting of quartz, microcline, zoned plagioclase, biotite, accessory zircon, apatite and magnetite. It will be noticed that this composition is exactly that of the average gneissose Fundamental Gneiss from which it does not seem therefore to be separable as a truly distinct formation. It represents perhaps a zone amidst the general spread of biotite-gneiss of the Peninsula which, subsequently to its primitive consolidation, has become fused and active. It is considered by Jaya Ram to be intrusive, at its southern extremity, into the Coimbatore Charnockites.

If we accept the latter relationship, it is conceivable that, even where intrusion is not observed on the large scale, considerable impregnation of acidic material may have affected the Coimbatore Charnockites, and the same may, perhaps, prove true of other Charnockite areas.

If any confirmation were found to the above outlined suggestion that the metamorphism which has originated the Charnockites is partly or largely a result of acidic impregnation, the "intermediate" forms of Charnockite would have to be regarded as somewhat of the nature of "hybrid" or rather "syntectic" rocks.

On the supposition of the identity of the Dharwar and Charnockite series, the Charnockite outcrops of the Coimbatore and Shevaroy regions constitute somewhat of a link between the almost totally igneous facies of the Mysore Dharwars and the largely sedimentary facies of the Archæans in Vizagapatam, Ganjam and Kalahandi. With respect to Vizagapatam in particular, Middlemiss makes the following remark: "The conjunction of iron-bearing beds with crystalline marble (sometimes, as mentioned by Smith and Walker, containing scapolite and diopside) and with quartz-garnet-sillimanite rock (typical Khondalite of Walker) reminds me of the somewhat similar association of rock types at Madukarai near Coimbatore, at Uttukuli and Viziamangalam, at Satyamangalam, Coimbatore district." (Gen. Rep. Geol. Surv. India, 1901-1902, p. 22). The Shevaroy group of hills according to King and Foote include alternations of Charnockites (the so-called "syenitoid gneiss") constituting a large proportion of the major hill-ranges, more or less felspathic quartzites, often with very distinct false-bedding, hornblende-schists, numerous and important beds of magnetic iron, constituting many of the minor hill-ranges and running across many of the major hill-ranges, also occasionally crystalline limestones (Mem. Geol. Surv. India, Vol. IV).

Summarising the above, the association of Khondalites with the Charnockites in the north-eastern part of the Peninsula points to a Dharwarian age of the Charnockites as clearly as the presence of the banded siliceo-ferruginous rocks both in the Dharwar series and Charnockite series of Southern India.

The general conclusion is that the Charnockite Series and

Khondalite Series may represent an intensely metamorphosed facies of the Dharwars and of their equivalents.

DYKE-ROCKS APPARENTLY CONNECTED WITH THE CHARNOCKITES AND DHARWARS

The distribution of the normal Dharwarian type and of the intensely metamorphosed Charnockite-Khondalite type throughout vast areas over which they mutually exclude one another clearly suggests that we are in presence ot a case of regional metamorphism. If the Charnockites represent a metamorphic facies of rocks that were originally basalts and dolerites, or andesites, it follows that, throughout the region affected by this type of metamorphism, any rocks of similar composition should be affected by the same type of metamorphism whether they were originally bedded volcanics or else intrusive dykes, sills or laccolites. While there is reason to believe that a large proportion, perhaps the largest proportion of the Charnockites, represents truly bedded rocks, the possibility nevertheless remains that some of them are intrusive. Consequently, the instances of intrusive dykes recorded by Holland in Coorg need not affect the interpretation proposed for the bulk of the large masses of Charnockite regarded as bedded effusives and not as intrusives.

Apart from the fringe of the large Charnockite outcrops of Coimbatore and of Coorg, the edge of which penetrates into Mysore territory and is therefore represented on the Mysore geological map, this map also shows, in their neighbourhood, a number of dykes of " basic Charnockite, norite, pyroxenite, etc ", cutting across the Fundamental Gneiss, which might be regarded as fissure dykes connected with the eruptives of the neighbouring large outcrops.

With reference to these Charnockite dykes it is interesting to notice that the map also shows a number of dykes described in the index as " hornblendic, epidiorites, hornblende and pyroxene granulites " These also traverse the Fundamental Gneiss and, in a few instances, are shown to penetrate minor outliers of the Dharwars. It would seem at first sight that these are fissure dykes connected with the Dharwar volcanics, just as the above-mentioned Charnockite dykes would be fissure-dykes connected with the main Charnockite masses, just as the innumerable dykes of the Great Peninsular Trap System are fissure dykes connected with the lava flows of the Bijawar and Kadapah. This view would appear to be strengthened by an examination of the distribution of the above-mentioned dykes as indicated on the geological map of Mysore. The dykes of the " hornblendic, epidiorite, hornblende and pyroxene granulite " group are represented chiefly in the neighbourhood of the Dharwar outcrops, those of the "basic Charnockites, norite, pyroxenite" group, chiefly close to the massive outcrops of Charnockite. Just as in the case of the massive Dharwar and Charnockite outcrops, the two groups of dykes in their distribution are mutually exclusive: once the region of Charnockite dykes is definitely entered, there are no more dykes of the epidiorite-pyroxene-granulite class; once the region of the latter class of dykes is definitely entered, there are no more dykes of Charnockite.

It is worth remarking that, amongst the epidiorite and pyroxene-granulite group, there cannot be much difference between a pyroxene-granulite and a charnockite. The fact of such dykes having been classified together with the epidiorite dykes is an instance in which rocks bridging over the characteristics of epidiorite and charnockite have been united in actual practice.

The appearance of the map, as above mentioned, conveys the impression that the dykes of the epidorite and pyroxene-granulite group, traversing the Fundamental Granitic Gneiss, are fissure erruptives connected with the effusive volcanics of the main Dharwar outcrops. The few instances in which small outliers of the Dharwars are themselves penetrated are intelligible as representing dykes cutting through a low horizon of the succession, and connected with flows belonging to a higher horizon. This explanation is not adopted on the Mysore map because the entire mass of the Fundamental Granitic Gneiss is regarded as newer than the Dharwars. Consequently, it has been necessary to assign a post-Dharwar age to the epidiorite dykes. This explanation assumes that the original floor of deposition of the Dharwars is nowhere preserved. Such an assumption is difficult to understand. The Dharwars cannot have been deposited in mid-air. They must have rested on something, and that something cannot be anything else but the granitic layer which everywhere constitutes the solid floor beneath the surface of the globe, at least throughout the continents. The Dharwars and Charnockites in Mysore together scarcely occupy one quarter of the area occupied by the Fundamental Granitic Gneiss, and it is difficult to imagine how the original floor of the Dharwars could have been systematically stoped away or secondarily fused by a process that would have respected no other rocks than the Dharwars themselves.

Usually the Dharwar outcrops, in spite of the considerable disturbance that the rocks have been subjected to, clearly exhibit a synclinal structure. The strata now occupying these synclines represent a portion of the rocks that have been respected by denudation. Of the portion of these synclinal bands that have escaped denudation from above, the visible portion represents the considerable fraction that has escaped removal by corrosion from below. If so much of the Dharwars has escaped corrosion, it is reasonable to suppose that at least as much of their original floor must also have been preserved.

So far as we are able to form an opinion from the present state of the enquiry, the areas of Fundamental Gneiss traversed by the epidiorite dykes might represent therefore a portion of the floor of the Dharwars. They would represent, in every reasonable sense, a portion of the original crust of the globe. It is regarded by Daly as highly probable that portions of the original crust still exist in various parts of the globe though they cannot be identified from the stratigraphical data at present available. The epidiorite and pyroxene-granulite group of dykes, if their Dharwar age be confirmed, would constitute a ready means of identifying such portions of the original crust in the case of the Indian peninsula.[1]

CONCLUSION.

The actual conditions that promote the form of metamorphism that has produced the Charnockites must, for the present, remain incompletely understood. The late Mr. Parsons from a careful study of these rocks in Ceylon had come to the conclusion that they have been entirely re-crystallised, while various circumstances, such as the manner in which they have preserved their bedding, the growth of secondary pyroxene in epidiorite, as well as the typically granulitic structure, suggest that the re-crystallisation has largely taken place without complete fusion.

We are only on the threshhold of the study of these interesting rocks. Yet it has been thought that the publication of the above suggestions regarding their possible relationship to the Dharwars may fulfil a useful purpose by indicating some of the lines along which it might be advisable to conduct further enquiry.

---

[1] This refers specially to those regions where, as is usually the rule in Peninsular India, the post-Dharwar rocks have not been much affected by earth-movements. In certain exceptional cases, as in some parts of Chota Nagpore and of South Rewa, the rocks of the Great Peninsular System have themselves been partly metamorphosed and have assumed the character of epidiorites, and it becomes then more difficult to distinguish between rocks of Dharwar or of post-Dharwar age.

18. Note on the occurrence of *Dolium variegatum* Lamarck at Maskat, with considerations on its geographical distribution at the present day and in former geological times.

By E. VREDENBURG.

Published with the permission of the Director, Geological Survey of India.

The investigation of the Tertiary molluscan faunas of India has brought to light some interesting instances of species unknown in the living state in the Indian Seas, though surviving at the present day in the southern hemisphere. Amongst typical instances may be mentioned *Clavatula sacerdos* Reeve, at present living in South and West Africa, and *Clavatula sinuata* Born, living in South Africa, both of which have been observed in a fossil condition in the Upper Tertiary of the Mekran region.

The species forming the subject of the present note, *Dolium variegatum* Lamarck, had hitherto been regarded as special to the living fauna of Australia. Its fossil occurrence in the pliocene of Java was noted by Martin in 1899 (Samml. des geol. Reichs-Museums in Leiden, new series, Vol. I, p. 162, Pl. XXV, fig. 376), and it has also been observed in beds of the same age in the Mekran region.

While studying recent shells in the Indian Museum for the sake of comparison with the fossils, two specimens of this species were noticed amongst the collections from Maskat. In their list of the molluscan fauna of the Arabian Sea (*Proc. Zool. Soc. Lond.*, 1901, Vol. II, p. 385) Melvill and Standen have mentioned from Charbar, on the opposite coast of the Gulf of Oman, a shell identified as "*Dolium galea* var. *luteostomum*" which perhaps corresponds with *Dolium variegatum*. Neither the Mediterranean *Dolium galea* (Linn.) nor the Japanese *Dolium luteostoma* Küster have been observed in any part of the Indian Ocean, while *Dolium variegatum* is not unlike the immature specimens of *Dolium galea*. Charbar is separated from Maskat by the deep portion of the Gulf of Oman, but the shallow-water organisms can easily travel along the coast round the head of the gulf, the total area of which is of moderate extent.

Moreover, amongst some shells which I picked up on the beach of Clifton, a suburb of Karachi, in April 1900, and which I unpacked a few days ago, I have noticed another specimen of *Dolium variegatum*, the presence of which further adds to the probability of the suggested identification of the Charbar demonstrate that its present occurrences are the shrunken remnants of a once much wider range, and do not supply the slightest indication as to whether its original home was situated in Australia or in Arabia, or in some totally different region.

The other instances of southern species occurring as fossils in the Tertiary of India, lack the confirmation which the local survival of the species affords in the case of *Dolium variegatum*. Nevertheless, keeping this instance in mind, they do not at all imply the necessity of any migration from India to the southern seas, but may merely indicate the dwindling, in recent times, of a once much wider area of distribution.

All these instances may be taken as examples of a law which is probably of very wide application in the history of many species, to the effect that the shrinking of the area of distribution of a species previous to its final extinction is a much slower process than its expansion subsequent to its original creation.

19. The Spelling of Bābar's Name.

By Maulavī 'Abdu'l Walī.

What is the correct spelling or rather pronunciation of Emperor Bābar's name has not, I am afraid, been finally decided. Mr. Francis Stuart Poole in a note to the Introduction to his "Coins of the Shahs of Persia" (1887), p. xxv, writes that according to Dr. Rieu the right pronunciation, as shown by a couplet of the prince's own composition, is Bābur. Mr. H. Beveridge, writing in the Asiatic Quarterly Review (January and April, 1906), pp. 79-93 in an article entitled "The Emperor Babar in the Ḥabību's-Siyar," notes the remark of Mr. Poole, which he corroborates by a distich from Khawand Amir's Habību's-Siyar, where Bābur seems to him to rhyme with *tahur*. In his Introduction to Divān-i-Bābur Pādishāh, published as an extra-number of the Journal and Proceedings of the Asiatic Society of Bengal (New Series), Vol. VI, 1910, Dr. E. D. Ross alludes to the above two remarks; quotes a line from Bābar's poem, previously published by Ilminski from Prof. Berezine's MS., for which Dr. Ross is indebted to Mr. Beveridge; and publishes, moreover, the little Mat͟hnavī of eight distichs from the Ḥabību's-Siyar, page 291, Vol. III of the Bombay Lithograph, including the distich noted by Mr. Beveridge But what Mr. Beveridge read as *tahur* (in the last distich of the poem), Dr. Ross reads the same as partav-i-dur (پرتوِ دُر), to rhyme it with Bābur. I looked into the text of the Bombay Lithographic edition of the History and found that the word was neither *tahur* as Mr. Beveridge read it, nor partav-i-dur, as Dr. Ross made it out; but a third word, *viz. tahauur* (تَہَوُّر), which, however, correctly rhymes with Babur. The last distich as Dr. Ross has published it reads :—

خدیو کامران پرتوِ دُر   ملا و ملک ملت شاه بابر

for   خدیو کامران پر تہوُّر   ملاذ ملک و ملت شاه بابر

So, however defective might be the premise, based on incorrect reading of the word that would rhyme with Bābur, it is noteworthy that the conclusion arrived at is borne out by the accurate decipherment of the verse. There is another little misprint in the sixth distich. For دود رافت و خیز اقبال ایشان should be read بود در آفت و خیز اقبال ایشان.

There can be little doubt that according to the aforesaid couplet, the pronunciation of Bābar's name is Bābur, *i.e.* with a zamma on the second *b*. I have consulted a large number of Persian and Arabic Lexicons, but only a modern Dictionary, the G͟hiyāt͟hu'l-Lug͟hāt, notes the word and spells it with a zamma on the second *b* (بضمّ بای موحدهٔ دوم) ; but another still more modern Dictionary, the Farhang-i-Ānand Rāj, which has no doubt consulted G͟hiyāt͟h, puts a fatah on the second *b* (بفتح بای موحّده) and reads the word as *Bābar*. Is the word Turki or Persian ? The two Turki Dictionaries I have consulted do not note the word. The word Babr (بَبر) is noted by all the Dictionaries— Arabic, Persian, and Turki. In a learned *Qaṣīda*, which Maulānā Qambarī of Nis͟hāpūr, who, according to Daulat S͟hāh's Memoirs of Poets (written in 892 H.), lived in the latter days of his life at Mas͟hhad and Herāt, wrote in praise of Sulṭān Ābu'l-Qāsim Bābar (853-861 H.), and which has been quoted by Daulat Shāh (Prof. E. G. Browne's Edition, 1901), the word is written as *Bābar*, the last syllable of which (bar) rhyming with tar, zar, etc. The following are the opening lines of the *Qaṣīda* :—

این گهرها بین که در دریای اخضر کرده اند
زین مشاعل آتش خور بین که چون بر کرده اند
کشتیء سیمابگون در بحر قلعی رانده اند
بیضهٔ کافور در طشت معنبر کرده اند
آتشین اجرام را همچون سری بیدست و پا
اندرین بحر زمرّدگون شناور کرده اند
بر مجرّهٔ بدر برکردار میزانی بود
کش عمود از سیم خام و کفّه از زر کرده اند
می نماید جوهری قایم بایجاد عرض
اندر ابداع از عرض قایم بجوهر کرده اند
این مدخّن مجمر سیمابگون بین کاندرو
صد هزاران اخگر از اجرام اختر کرده اند
وین معنبر کشتیء ظلمت پر از مسمار نور
بادبان کز بادش و از خاک لنگر کرده اند
آب خشک این آسمان و آتش تر اختران
برخلاف از آب خشک این آتش تر کرده اند

شاهدان و مطربانِ چرخ زنگاري نقاب

ابن غزل را در مدیح شاه بابر کرده اند

It will thus be seen that while Maulānā Ghiyāthu'd-Dīn ibn-i-Humāmu'd-Dīn al-Ḥusainī, otherwise known as Khawand Amīr, the author of the Ḥabību's-Siyar fi Ākhbār-i-Āfrādi'l-Bashar, spells the name of Emperor Ẓahīru'd-Dīn Bābar, at least in the distich quoted, as Bābur, another contemporary poet, Maulānā Qambāri of Nishāpūr, addresses his patron Sulṭān Ābu'l Qāsim Bābar as *Bābar.* I am therefore of opinion that the name need not be altered to Babur, as Mrs. Beveridge is doing throughout her translation of Babar's Turkish Memoirs. The name can be spelt and pronounced either Bābar or Bābur.

21. Note on the taxonomic position of the Genus *Camptoceras*. Benson and of *Lithotis japonica*, Preston (Mollusca Pulmonata).

By N. Annandale, D.Sc., F.A.S.B , *Director, Zoological Survey of India*; and B. Prashad, D.Sc., *Superintendent of Fisheries, Bengal.*

[With Plate XII.]

I.

Camptoceras, Benson.

The genus *Camptoceras* was described in 1843 by Benson,[1] who in 1855[2] gave a more detailed description of *C. terebra*, the only species known to him. In 1871 Blanford[3] described two other species, *C. austeni* and *C. lineatum*. He expressed a doubt. however, whether the latter was congeneric with *C terebra* and *C austeni*. No further precise information about the genus was available until a fourth species was recently discovered in Japan by the well-known Japanese conchologist Mr Y. Hirasé and Mr. S. Kira. This species has been referred to in literature both by Preston,[4] who states that it will shortly be described by Mr. Bryant Walker of Detroit, and by Annandale.[5] Although Benson described the external characters of the animal as well as the shell. there has been much dispute as to the systematic position of the genus—a dispute that extends not only to the family but even to the sub-order in which it should be placed. Benson assigned it to the Limnaeidae (or as he said, to the sub-family Lymnacinae of the family Helicidae) and placed it between *Ancylus* and *Limnaea*, while Nevill[6] was of the opinion that it was allied to *Succinea*; Chenu[7] and Fischer[8] thought it to be allied to *Physa*, while Gude,[9] agreeing with Nevill, places it in the family Succineidae.

The shell-characters are so remarkable that they provide little guidance as to the systematic position of the genus.[10]

---

[1] *Calcutta, Journ. Nat. Hist.* iii, p. 465 (1843).

[2] *Ann Mag. Nat. Hist.* Ser, 2, xv, p. 10 (1855)

[3] *Journ. As. Soc Bengal* xl, p. 40. pl. 2 (1871).

[4] *Ann. Mag. Nat. Hist.* Ser. 8, xvii, p 160 (1916)

[5] *Mem. As. Soc. Bengal*, vi, p. 56 (1916).

[6] *Hand-List Mollusca* i, p. 215 (1878).

[7] *Man. Conchyl.* i, p 481, fig. 3554 (1859).

[8] *Man. Conchyl.* p. 511 (1883).

[9] *Faun. Brit. Ind. Mollusca*, ii, p. 460 (1914).

[10] Godwin-Austen has assigned to the same genus (*Quart. Journ. Geol. Soc. London*, xxxviii. p. 220, pl. 5, figs. 1-7, 1882) certain fossils from the Eocene of England and Henry Woodward agrees with him. Gude (*loc. cit.*), however, is inclined to regard the case as one of convergence, and the fossils are imperfectly preserved.

All that can be said is that the shell is perhaps more like that of certain abnormal forms of *Planorbis*[1] than any other. It is thin and translucent, of a pale brownish or yellowish colour, coiled sinistrally, extremely elongate and narrow, especially in *C terebra*, *C. austeni* and the Japanese form; the whorls are few in number and the suture so deep and broad, especially between the last and the penultimate whorls, that the whole shell has a "solute" appearance. The aperture is elongate and narrow and is surrounded in all the species by a peculiar almost membranous rim. Benson describes the soft parts as follows:—"Animal, Tentaculis duobus filiformibus, obtusis, oculis majoris inter tentacula sitis, proboscideque mediocri munitum; pallio labia testae haud transeunte; pede brevi, longitudinem aperturae vix superante."

Living specimens of the Japanese species[2] agree in every respect with this description. Unfortunately specimens brought in spirit to India met with an accident and dried up completely before an examination could be made. With the aid of dilute glycerine, however, we have been able to soften a specimen sufficiently for us to see the external characters quite clearly. The edge of the mantle is thickened and highly vascular, but there is no external branchial fold on the ventral surface. The tentacles are elongate, tapering and filiform; they have the eyes situated at their base internally. The outline of the foot is closely similar to that of the aperture of the shell. The snout is broad and rounded, and apparently does not project beyond the anterior margin of the foot.

We have extracted the radula from a Japanese specimen. It resembles that of *Ancylus* in general structure, but has also certain resemblances to that of some species of *Succinea*.

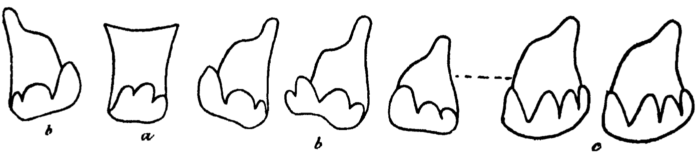


FIG. 1.—Radular teeth of Japanese species of *Camptoceras*. *a* = central tooth. *b* = lateral teeth. *c* = marginal teeth.

Transversely the rows of teeth are feebly angulate. The central tooth, though relatively large, is well differentiated from the others, while the lateral teeth gradually change into marginals from within outwards. There are about eight rows that can be called lateral and six that are definitely marginal. All the teeth are extremely minute; in general form they may be described as being intermediate between those of *Planorbis* and those of *Ancylus*. Their cusps are stout and their denticulations rounded (except in the marginals) and not at all strongly differentiated. The cusp of the central tooth has three short denticulations, of which the middle one is broader and more prominent than either of the lateral projections; the whole structure is asymmetrical and there is a shallow sloping superficial groove separating the right denticulation from the central one. The cusps of the lateral teeth are very similar, except that the innermost denticulation is the largest. This becomes more accentuated as the marginal region of the radula is approached. The innermost denticulation is occasionally divided. The cusps of the marginals are almost pectinate and form a sloping ridge in which the innermost part is the most prominent.

---

[1] See Simroth "Mollusca" in Bronn's Thier-Reichs, III, pt. 3, p. 121, fig. g (1909).

[2] We have refrained from discussing the shell-characters of this species in view of what has been said above. We may note, however, that in most points they are almost exactly intermediate between *C. terebra* and *C. austeni*. We think that there can be no doubt as to the generic identity of these three forms.

We can find no trace of a horny jaw.

Habits.—So far as habits are concerned the Japanese form is identical with Benson's. He and his friend Dr. Bacon found the original specimens crawling slowly on weeds in a deep pool in the bed of the river Ram Gunga at Moradabad in Rohilkhand. Some Japanese specimens were kept alive for several weeks in a bowl of water and aquatic weeds (*Hydrilla* and *Vallisnieria*). They fed on the weeds and showed no inclination whatsoever to leave the water. The specimens described by Blanford on the other hand were found by Col. Godwin-Austen completely dry, among vegetation at the edge of a desiccated marsh in Eastern Bengal. It has been noticed by both Gude and ourselves that some of these specimens, after 47 years, still retain a well developed epiphragm or false operculum. We have, however, failed to extract the animal from a shell in this condition. The curious almost membranous rim of the aperture of all species—particularly broad in the Japanese form—gives a firm lodgement to the epiphragm and is, we believe, a special adaptation correlated with its secretion We think it probable, therefore, that all the species are normally aquatic but have the power of remaining in a torpid condition protected by an epiphragm, when the pools in which they live dry up in seasons of drought.

Taking all these facts into consideration, we are of the opinion that the genus *Camptoceras*, though allied to some extent to *Planorbis*, should be assigned to the family Ancylidae of the suborder Basommatophora as defined by Pelseneer[1] and not to the Elasmognatha of the sub-order Stylommatophora in which is included the family Succineidae.

---

[1] *Lankester's Treatise on Zoology, Mollusca*, p. 185 (1906).

The geographical distribution of the genus is at present apparently discontinuous, but as Benson pointed out in his original description, the animal is hard to discover and extremely local. This is the case in Japan as well as in Rohilkhand and Bengal. We can claim considerable experience of the aquatic fauna at any rate of the latter part of India, but have never come across a specimen. Mr Hirasé informs us that the Japanese species is only known to him from Kogomura in the Osaka district, and a very careful search for specimens made by one of us in apparently suitable spots in the country round Lake Biwa, which is situated in an adjacent district, was unsuccessful. If Godwin-Austen's identification of the Eocene species is correct, the genus must have had at one time a very wide range in the Palaearctic region.

We publish this note, with figures of three allied species, in the hope of attracting attention to a very remarkable genus of molluscs, which has lain *perdu* for nearly half a century.

II.

Preston[1] has recently described from Lake Biwa in Japan a peculiar shell which he has called *Lithotis japonica*. It is difficult to see what reason he can have had for placing it in this genus, to which it bears no real resemblance. We have examined the type-specimen and two others and have extracted the dried animal from the former. In most respects, so far as it is possible to express an opinion on the basis of such material, the soft parts bear a very close resemblance to those of *Limnaea*, except that the tentacles are elongate and cylindrical or subcylindrical. In the structure of the jaw and radula the species is identical with those of that genus. The shell differs from that of the short spired species of *Limnaea* only in having the spire distinctly lateral in position, in its neritiform shape and in the peculiar position and structure of the columellar fold. In these features it bears a very close resemblance to the shell of *L. brevispira*, von Martens[2] from a lake in Sumatra. We believe that the differences from the normal type of *Limnaea* are sufficiently great to justify generic separation and propose for the genus thus formed the name *Omia*, derived from that of the Japanese province in which the type-species was found.

Omia, gen. nov.

A genus of the family Limnaeidae consisting of species in which the shell is dextral, small, thin and neritiform. The spire is short, flattened and lateral in position, the body-whorl large, ovoid, convex above and flattened on the ventral surface. The aperture, though little expanded, is relatively of great size, oval, with its main axis practically at right angles to that of the spire. The columellar fold is broad, flattened and turned slightly inwards, running obliquely across the posterior margin of the aperture and almost forming a septum in the posterior part of the shell.

---

[1] *Ann. Mag. Nat. Hist.* Ser. 8, xvii, p. 160 (1916).

[2] "Suss-und Brackwass. Moll." in Weber's *Zool. Ergeben Neiderl. Ost-Ind.* iv, p. 2, pl. 1, figs. 1 and 2, xii, figs. 1 and 3 (1897).

The soft parts apparently resemble those of *Limnaea*, except that the tentacles are long and cylindrical or subcylindrical; the mantle is incapable of being expanded over the shell and is not thickened or highly vascular at its lower margin.

The upper jaw and radula exactly resemble those of *Limnaea*.

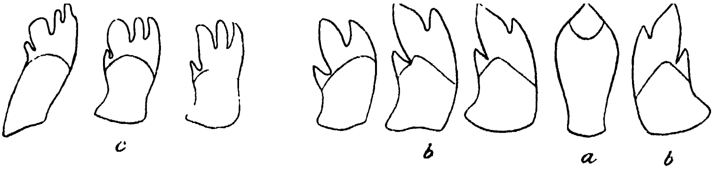


FIG. 2.—Radular teeth of *Omia japonica* (Preston). *a* = central tooth. *b* = lateral teeth. c = marginal teeth.

Type-species. *Litholis japonica*, Preston, from Lake Biwa in Japan.

Known geographical range. Main island of Japan; Sumatra.

von Martens (*loc. cit.*) compares the Sumatran species (his *Limnaea brevispira*), which we believe to be closely related to the Japanese one, with certain short-spired lacustrine European species of *Limnaea*, but it differs from all of those in the orientation of its spire. In some respects the shell resembles that of the Californian genus *Pompholyx*, Lea; but we have no evidence that it is hyperstrophic as in that species, or that the animal is sinistral.

We figure some of the radular teeth and also the upper jaw of the type-specimen of the type-species. The jaw is very feebly developed and its side-pieces are imperfectly cornified. The teeth are very like those of the Sumatran species but differ slightly in outline. There are about seven rows of laterals and nine of marginals. Our figures of the teeth and jaw may be compared with those of von Martens (*op. cit.*, pl. xii, figs. 1, 3). As Preston's figures (*op. cit.*, pl. ix, figs. 6, 6*a*) are not quite correct, we have had fresh drawings made from the type-shell.

Like *Camptoceras*, *Omia* has apparently a discontinuous distribution. Not only is the animal extremely inconspicuous, however, but it is particularly liable to be overlooked on account of its habits, for it insinuates itself into cavities on the lower surface of stones.

EXPLANATION OF PLATE XII.

Camptoceras terebra. Benson

FIGS. 1, 1*a*.—Shell of paratype from Moradabad. Rohilkhand, U.P.: × 10.

Camptoceras, sp. nov.

„ 2, 2*a*.—Shell from Kogamura, Osaka district, Japan ; × 10

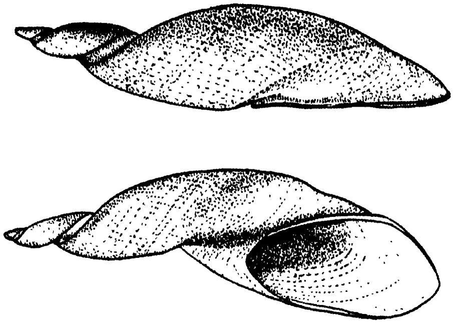
Camptoceras austeni, Blanford.

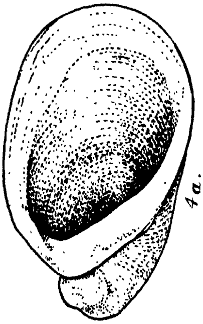
„ 3, 3*a*.—Shell of paratype from the Dacca district, Bengal ; × 10

Omia japonica (Preston).

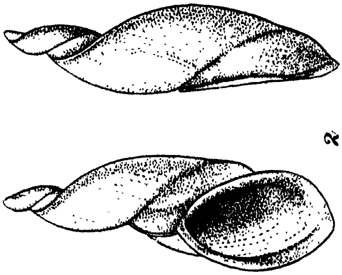
„ 4, 4*a*.—Shell of type-specimen from Lake Biwa, Japan ; × 11

„ 5.—Jaw of same individual (highly magnified).

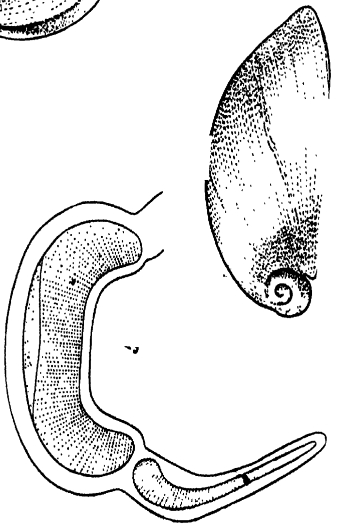




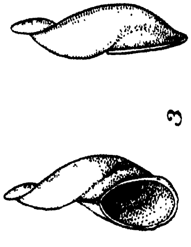
4 a.



2



5



3

A. Chowdhary & D. Bagchi del.

22. The Poet Shaikh Mufakhkhar-al-dīn Āẕarī of Isfarāyīn.

By Lt.-Colonel T. W. Haig, C.M.G.

"The luminary of his auspices shed its light on the lords of spirituality.

"He was the noble falcon of the zenith of perception, winged with high resolve."

For the life of Shaikh Āẕarī we have more than one authority, the best and most ample being his life by Daulat Shāh in the *Tazkirat-al-Shu'arā*, which has been edited by Professor Browne. Firishta, however, in his history of the Bahmanids of the Dakan, gives many details of Āẕarī's life which are not mentioned by Daulat Shāh, and both he and 'Alī bin 'Azīz Allāh Ṭabāṭabā'ī of Samnān, in the *Burhān-i-Ma'āṣir* the first part of which has been translated by Major J. S. King, give accounts of Āẕarī which differ from that of Daulat Shāh by representing the poet not as the contented *darvīsh* withdrawing himself from mundane affairs, but as a courtier accepting large gifts and writing for gain like any other court poet.

Isfarāyīn was a small town situated in longitude 57°18′ E and latitude 37°6′ N. on a plateau known as the Plain of Isfarāyīn. It is still marked in most large maps, but I am informed that the town itself, though it still gives its name to the district, has almost, if not entirely, disappeared. Unfortunately I have not been able to visit the place. Āẕarī's father, Khvāja 'Alī Malik, was one of the *Sarbadārs* of Baihaq, originally a band of rebels who, under the leadership of 'Abd-al-Razzāq of Bashtīn, in Khurāsān, who had at one time been in the service of the Il-Khān, Abū Sa'īd, rose in A.H. 737 (A.D. 1337) against a local governor of Khurāsān and obtained possession of the districts of Sabzavār and Isfarāyīn, over which the Sarbadārids, the descendants of 'Abd-al-Razzaq, reigned until A.D. 1381, with their capital at Sabzavār.[1] Khvāja 'Alī Malik was governor of Isfarāyīn under the later Sarbadārids and Shaikh Āẕarī was born there in A.H. 784 (A.D. 1382), one year after the overthrow of the dynasty by Taimūr. As a young man he devoted himself to poetry, and especially to its most lucrative form, the writing of odes in praise of kings and rulers, with the object of obtaining preferment. Daulat Shāh quotes the opening couplet of an ode which he wrote in praise of Shāh Rukh Sulṭān, Taimūr's third son, then reigning in Khurāsān, which aroused the jealousy and envy of the poet Khyāja 'Abd-*al* Qādir 'Ūdī, who subjected the young Āẕarī to a severe examination in the poems of Khyāja Salmān in which Āẕarī acquitted himself so well that he earned the commendation of Shāh Rukh, who promised him the reversion of the post of Malik-*al*-Shu'arā, or poet laureate. At this time, however, an access of religious zeal impelled him to abandon the quest for power and wealth and to devote himself to a life of poverty and pilgrimage. The following verse describes the change which came over him :—

---

[1] See *The Mohammadan Dynasties*, by Mr. Stanley Lane-Poole, p. 251.

او در طلب حکومتی می فرسود * حق سلطنت فقر بدو لطف نمود

"He was wearing himself out in seeking to govern his fellowmen
"When the Lord of Truth conferred on him, of His bounty, the kingdom of poverty."

He attached himself as a disciple to the famous Shaikh Muhīyy-*al*-dīn Ṭūsī-al-Ghazzālī, under whom he studied the *aḥādīth* (the traditions of Islām) and with whom he set out on the pilgrimage to Makkah but his spiritual guide died at Aleppo and he next attached himself to Sayyid Ni'mat-Allāh, from whom he received, after a course of study, the mantle of a religious teacher, and on leaving whom he set out on his travels, seeking everywhere the society of well-known professors of his faith. He twice performed on foot the pilgrimage to Makkah and there wrote a book on the ceremonies and sacrifices prescribed for the pilgrimage and the history of the *Ka'bah*. From Makkah he travelled to India, where, according to Daulat Shāh, he remained for some time From Firishta we learn that he arrived in the Dakan when Aḥmad Shāh Valī, the ninth king of the Bahmanī dynasty, who is described by Daulat Shāh as 'one of the kings of Gulbarga," was completing his new capital, Bīdar, that is to say in A.H. 833 (A.D. 1429–30) when Āẕarī was forty-nine years of age. It was here that Āẕarī suffered a relapse into the worldly ways of his youth for we find him writing encomiastic verses at least as fulsome as those of any ordinary court poet. His first patron was 'Alā-*al*-dīn Aḥmad, the eldest son and heir-apparent of Aḥmad Shāh who introduced him at his father's court, where he received rewards for the odes which he composed in praise of the king and of his new capital. By Aḥmad's command he composed in the *mutaqārib* metre and in imitation of Firdausī's epic, the *Shāhnāma*, an historical poem which he named *Bahman-nāma*, or the epic [1] of Bahman, from 'Alā *al*-dīn Ḥasan, Bahman Shāh,[1] the founder of the dynasty, and Bahman, son of Isfandiyār, from whom the king claimed descent. I have never seen or heard of a copy of this poem, and it is not mentioned by Daulat Shāh, but Firishta often quotes passages from it. Copies of it were probably always rare for it is not mentioned by 'Alī bin 'Azīz Allāh, and its loss is unfortunate, for though Persian epics are usually so bombastic and hyperbolical that they cannot be accepted as trustworthy historical records they are useful for determining the dates of events, for the exigencies of metre limit the vagaries of copyists, and even when a poetical text has been corrupted it is sometimes possible to reconstruct it by means of the metre

---

[1] Usually, but incorrectly styled by European writers, following Firishta, 'Alā-*al*-dīn Ḥasan Kangū Bahmanī. His designation, which

Āzarī, when he had completed the poem by bringing his account down to the reign of Aḥmad Shāh, sought leave to return to his home, but the king pressed him to remain, saying that his companionship consoled him for the loss of the saint Muḥammad Gīsū Darāz, who had lately died and whose death he had felt deeply. According to Firishta Āzarī agreed to remain and sent for his family. Aḥmad Shah now completed his new palace at Bīdar and Āzarī wrote on it two couplets which were so much admired that they were written by Mullā Sharaf-al-dīn of Māzandarān, a disciple of the saint Shāh Ni'mat Allāh of Māhān and a noted calligraphist at the Court of Aḥmad Shāh, in the *jalī* script, and cut on a large block of stone which was built in above the gateway of the palace. They are in the usual strain of Persian encomiastic poetry :—

حبّذا قصرِ مشیّد که ز فرط عظمت
آسمان سُدّهٔ از پایهٔ این درگاه است
آسمان هم نتوان گفت که دور ادب است
قصر سلطان جهان احمد بهمن شاه است

"How great this lofty palace and how vast!
"The sky seems but its lowest portico.
"But this comparison lacks reverence
"For the world's king, Aḥmad Bahman, dwelleth here."

Āzarī was homesick and his object in writing the verses was to gain leave to return to his home rather than a reward. The stone was placed above the gateway without the king's knowledge, and when he saw it, he asked who had written the verses. His son, 'Alā-al-dīn Aḥmad, told him that Āzarī was the author and informed him of the object with which they had been written, adding that the poet was further prepared,

---

has been ascertained from a contemporary inscription, from legends on coins, and from historians other than Firishta, is here correctly given. See J.A.S.B., lxxiii, Part I, extra number, 1904 ; and *Imperial Gazetteer of Iudia*, ii, 385.

in return for the favour which he expected, to transfer to the king the merit of one of his two pilgrimages to Makkah. The pious Aḥmad, unable to decline such an offer, sent for Āẓarī and caused a large sum of money to be brought before him as a gift for the poet. There are discrepancies regarding the amount of the gift Daulat Shāh says that it was 50,000 *dirhams*, " which sum is called in their language, a *lak*." This is a mistake, for a lakh is 1,00,000. 'Alī bin 'Azīz Allāh gives the sum as 7,00,000 Dakanī *tangas*, equivalent to about 1,000 *tumāns*, but Firishta is more explicit and is probably correct in describing the gift as " 40,000 white *tangas*, each weighing a *tola* of silver," that is to say 40,000 rupees. There is also a discrepancy regarding the manner in which the gift was received. Daulat Shāh says that Aḥmad Shāh's courtiers told Āẓārī that he was expected to prostrate himself before the king, in gratitude for his bounty, and that the Shaikh indignantly refused to prostrate himself before any creature and rejected the gift, leaving us to infer that he departed empty-handed ; but Firishta says nothing about the proposed prostration and indicates that the gift was gratefully accepted, for Āẓarī replied in Arabic لا يحمل عطاياكم الا مطاياكم, " Only your beasts of burden could carry away your gifts," whereupon the king laughed and ordered that another 20,000 rupees for the expenses of the journey and five Hindu slaves should be given to him. Daulat Shāh's story of the suggested prostration is improbable, for it does not appear that any Muhammadan ruler in India before the reign of Akbar insisted on this ceremony, and it is very unlikely that the pious Aḥmad Shāh, who was distinguished by the respect which he paid to *Shaikhs* should have countenanced the suggestion that the holy man should prostrate himself before him. Firishta, with whom 'Alī bin 'Azīz Allāh agrees, is a better authority than Daulat Shāh for what occurred at the Court of Bīdar. Āẓarī was grateful for the gift, for his services to Aḥmad and his successors did not end with his departure from Bīdar, but he was weary of India and recorded his satisfaction in leaving it in an uncomplimentary couplet :—

من ترک هند و جیفهٔ جیپال گفته ام * داد بروت جو نه بیک جو نه میخرم

" Farewell to Jaipāl's carcase, farewell to Hindūstān,
' I would not give a barleycorn for the pride of Jauna
Khān "

Jaipāl was, of course, the opponent of Maḥmūd of Ghaznī and Jauna, or rather Jaunā, Khān was the title borne before his accession by Muḥammad bin Tughlaq, the first Muḥammadan conqueror, who completely subdued the southern Dakan and the peninsula of India. Āẓarī's spelling of the title is necessitated both by the metre and by the pun which he desires to perpetrate.

Aḥmad Shāh's liberality placed Shaikh Āẕarī beyond the reach of want, and according to Daulat Shāh he lived a retired life after his return to Isfarāyīn, absorbed in study and in religious meditation, and refraining from visiting the great and wealthy, many of whom, however, as well as theologians and divines, visited him. Daulat Shāh particularly mentions Sulṭān Muḥammad[1] the Taimūrid as having visited Āẕarī when he was on his way from Herāt to 'Irāq and as having profited much by the advice and instruction which he received He offered the Shaikh a bag of gold, which was not accepted.

Firishta tells us that Āẕarī, when bidding farewell to Aḥmad Shāh, promised to continue his epic, the *Bahman-nāma*, and fulfilled his promise, sending every year to Bīdar the additions made by him during the year to the poem, for which the materials must have been sent to him from India The *Bahman-nāma* was continued in this manner, by its original author, until the reign of Humāyūn Shāh, the eleventh king of the Bahmanī dynasty, who died in A.H. 865 (A.D. 1461), and was then continued by Mullā Naẕīrī and Mullā Sāmi'ī and afterwards by various other poets, some of whom dishonestly claimed the whole as their work, until the Bahmanī dynasty came to an end with the puppet Kalīm Allāh Shāh in A.D. 1526.

Shaikh Āẕarī died, at the age of eighty two, in A.H. 866 (A.D 1461–62), and was buried in Isfarāyīn. Khyāja Aḥmad *Mustaufī*, composed the following epitaph for him:—

دریغا آذری شیخ زمانه * که مصباح حیاتش کشته بی غو
چراغ دل دمفتاح حیاتش * بانواع حقائق داشت پرتو
چو او مانند خسرو بود در شعر * ازآن تاریخ موتش گشت خسرو

" Alas for our Āẕarī! *Shaikh* of his day,
" The lamp of whose life is extinguished and cold :
"The lamp of whose life was illumed with a ray
" From the lamp of his heart, in which shone divine truth
', E'en Khusrav ne'er sang more divinely than he
" And in "Khusrav" the date of his death we may see."

The reference is, of course, to the poet Amir Khusrav of Dihlī and the chronogram gives the date 600 + 60 + 200 + 6 = 866. In the first hemistich we should, I think, read مصباح for مفتاح.

---

[1] Sulṭān Muḥammad was the son of Bāisunqur, the third son of Shāh Rukh, the third son of Taimūr. He established himself in Fārs in A.H. 850 (A.D. 1446–47) and was slain by his brother, Bābur Bahādur, at Chinārān, about 37 miles north-west of Mashhad, on Ẕī-l-Hijjah 14, A.H. 855 (Jan. 7, 1452).

Daulat S̱hāh says that Āẕarī, after his return from India "sat for thirty years on the prayer-mat of devotion in Isfarāyīn," so that he left India in A.H. 836 (A.D. 1432–33).

23. The Sources of the Akbarnama.

By H. BEVERIDGE.

There is one point in Akbar's many activities for which, I think, he has not received sufficient credit from his biographers. This is his zeal for historical research as shown by the encouragement and help which he gave to Abul Faẓl in the composition of the Akbarnāma. Not only did he order his Commander-in-chief 'Abdur Raḥīm, the son of his old guardian Bairām Khān, to translate from Turkī into Persian the Memoirs of Bābur He also took pains to procure for Abul Faẓl information from various other quarters. It was Akbar who requested Gulbadan Begam, one of Bābur's daughters, to write her Memoirs, and who ordered Jauhar the ewerbearer, and the Turkaman Bayāzīd [Biyāt,] the kitchen superintendent, to record their recollections of the reign of Humāyūn. Jauhar's Memoirs were translated by Major Stewart. But the translation is imperfect, and has been severely citicised [by Erskine]. Stewart too had only one manuscript at his command and there are several, and there are differences in their wordings. Bayāzīd's Memoirs are valuable and contain interesting lists of officers. There is a copy in the India Office Library [vide Ethé's Catalogue No. 223, p. 95]. There is also a MS. in the British Museum [Add. 26.610] which contains a nearly complete translation by Erskine. I have given some account of Bayāzīd and his book in the A.S.B.J. for 1898, Vol. LXVI, Part I, No. 4. One interesting passage in his Memoirs, is his finding Gulbadan Begam and other ladies stranded at Aden in April 1580. They had been to Mecca, and were shipwrecked on their way home. [See Mrs. " Beveridge's Gulbadan Begam and the I.O. MS., p. 147ᵃ] Undoubtedly, Gulbadan Begam's Memoirs, known as tho Humāyūnnāma, are the most captivating supplement to her father's own Memoirs. and it is much to be desired that a complete copy of them could be found. At present only one copy [the B.M. one] is known to exist. It is imperfect and is, apparently, only a small fragment of what she wrote, and stops in the middle of a sentence. Other works which were probably written under Akbar's orders. or inspired by his action, are Niẓāmu-d-dīn's Ṭabaqāt Akbarī and Badayunī's abridgment thereof. Neither of these works has been completely translated. In Gulbadan Begam's Memoirs, p. 162 of translation, reference is made to a work by Khwāja Kīsīk, or Kessak, describing Humāyūn's marches in Scinde. This has not yet been found.

I am also inclined to think that Abul Faẓl had access to some fragments of Bābur's diaries of his later years which do not appear on the Turkī or Persian Wāqiāt. I allude to the Fragments published by Ilminsky at the end of his edition of Bābur's Memoirs, and which have been translated by Pavet de Courteille. It seems to me that some of these fragments are genuine. One important passage in them is what appears to be Bābur's own account of the great sacrifice which he made, as he thought, in order to save the life of his favourite son Humāyūn. I see no improbability in the idea that this is Bābur's own composition, or at least that it substantially represents what he said. He was ill for the last two or three years of his life. Sher Shah himself is a witness of the fact that Bābur was latterly a chronic invalid, and unable to govern. But he may well have roused himself to record what he must have regarded as his supreme act of abnegation. If Bābur did not record the incident himself, where did Abul Faẓl get it? He cannot have got it from Gulbadan Begam's Memoirs for she says nothing about the suggestion that Bābur should devote his most valuable possession, to wit, the Koh-i-nūr diamond, in order to save his son's life. Her story, p. 105 of the translation, is merely that her father implored the intercession of 'Alī,[1] the Prophet's son-in-law, and said that if the life could be given for another, he was willing to give his for Humāyun's.' I may remark on passing that Bāḅur's special application for help from 'Alī is rather curious in one who regarded himself as a strict Sunnī. It seems to show that Bābur still retained some Shia proclivities, though it was necessary for political reasons that he professed Shiaism when he was an ally of Ismail Ṣafavi. The great Bairām was suspected of similar leanings as may be seen in Badayunī's second volume, p. 47 of Persian text. Mr. Lowe's translation of the passage, p. 42, is incorrect, or at least misleading. The precedence about which Bairām was touchy, was not his own, but Alī's

If the Fragment about the sacrifice be not Bābur's own, it is possible that Abul Faẓl got the story from one of his many interviews with Akbar. As he says himself in his account of the pains he took to get full information [p. 32 of translation]: "By repeated interviews I arrived at correctness, and erased doubts and difficulties with the knife of investigation and ascertainment."

---

[1] The reference to a person named Karīmu-l-lāh in note, p. 105, is a mistake. The name "Karīmu-l-lāh" which follows "Murtaza 'Alī" (p. 105 l. 106 of the translation) is also a mistake. The text has مرتضی عليّ كرم اللّٰه وجهه which should be translated as "Murtaza 'Alī", may Allah honour his face! كرم الله وجهه (May Allah honour his face) is a phrase which follows the mention of 'Alī's name like the phrase صلى اللّٰه عليه و سلم which is peculiar to the name of the Prophet.

(Note by Phil. Secretary.)

It may be suggested that Abul Fazl's account of the sacrifice [pp. 275-76 of the Akbarnāma translation] is the original, and that the Ilminsky Fragment is only a Turkī fabrication made from the Akbarnāma. But against this is the fact that the Akbarnāma makes one Mir Abūl Baqā suggest the surrender of some valuable possession, whereas in the Fragment, P. de Courteille's translation, Vol. II, p. 459, the suggestion comes from Abul Qāsim. It is true, however, that the Fragment adds to Abul Qāsim the words Khwāja Khalīfa and others of Bābur's intimates. To me the introduction of the diamond-story seems rather inappropriate, for Bābur might have objected that the diamond was not his to give for he had already bestowed it on Humāyūn (Akbarnāma translation), pp 248 and 276, and Pavet de Courteille II, 460).

My chief object in this paper is to call attention to the Quellen as the Germans call them, which Abul Fazl had at his disposal, and to suggest that those which still exist should be edited and re-translated, and that every endeavour should be made to find those which have disappeared, or which exist only in what seems to be a small fragment such as at present is the case with Gulbadan Begam's work

But in conclusion I should like to add a word in praise of Abul Fazl's thoroughness. Both he and his master seem to have had a *flair* for research. Abul Fazl wrote his history five times, and he would fain have made a sixth revision, but the exigences of his public duties, and one may add, his cruel murder at the hands of Akbar's unworthy son Jahāngir, prevented him from fulfilling his intention and stopped him from finishing his gigantic task. It will always be a blot on Akbar's fame that he weakly refrained from executing justice on his servant's murderer. The women of his family were too strong for him, and he was sinking on the vale of years, and had impaired his powers by bad habits of drinking and of indulgence in opium and in Harem freuden. He had not the austere fortitude of his descendant Aurangzeb, and it is not without some show of reason that good Muhammadans regard the latter as a greater hero than Akbar who was far more brilliant and manysided, but had not Aurangzeb's firmness of soul. Perhaps we may say that Akbar was a Celt, and Aurangzeb a Teuton. Or as Mill put it, John Knox was a greater man than Alcibiades but Pericles was a greater man than either of them.

24. NUMISMATIC SUPPLEMENT No. XXXII.

***Note.*—The numeration of the articles below is continued from p. 378 of the "Journal and Proceedings" for 1918.**

198. SOME RARE MUGHAL COINS.

A recent find of Mughal silver coins in the Nadia District presents some features of unusual interest. Of the 42 coins recovered 23 were rupees, and these without exception are of well-known types. The remainder consisted of small change, principally in the form of *niṣārs*, and it is difficult to find a parallel to such a discovery of thirteen of these varieties, all of different dates and representing five different mints. Five belong to the reign of Shāhjahān and the rest are issues of Aurangzeb. The most remarkable are the small issues of Shāhjahān from the Akbarnagar mint and of Aurangzeb from Jahāngīrnagar [Dacca]. The latter is a minute piece of exactly 11 grains weight. The uniformity of weight in these small coins is remarkable, and except in the case of the Lahore *niṣār* of Shāhjahān, the scale runs almost exactly from 11 to 22, 44 and 88 grains.

Apart from the *niṣars*, the collection of which may well have been the work of some petty official attached to the imperial court, the Indian Museum gains three small silver pieces issued in the reign of Aurangzeb from the Akbarnagar mint. The two-anna piece has been published already in the British Museum Catalogue, but I have not been able to discover a parallel to the quarter-rupee of the same type. On all three the legend is in the well-known couplet form found on the Akbarnagar rupees.

The following coins appear to merit detailed description :—

(1) Shāhjahān.
Mint.—Akbarābad.
Date.—1046-10.
Weight.—43·7 grains.

Obverse.	*Reverse.*
ه	
د سا عازے	اکبر اباد
۱۰	دار الخلافه
شاه جهان	ضرب
ﺗــــــــار	۱۰۴۶
	ﺳـ ـــه

(2) **Shāhjahān.**
Mint.—Lāhor.
Date.—1050-14.
Weight.—43 gr.

Obverse.	*Reverse.*
ه	
باد شا غازی	لاهور
۱۴	ضرب
شاه جهان	دار السلطنه
ثـــــــار	۱۰۵۰
	ســـــنه

(3) Shāhjahān.
Mint.—Akbarnagar.
Date.—1064-28.
Weight.—22 gr.

Obverse	*Reverse.*
ثانی	نگر ۱۰۶۴
قران	اکبـــر
حـــب	ضرب
نثار صا ۲۸	

(4) & (5) Shāhjahān.
Mint.—Shāhjahānābād
Date.—(4) 1063-27.
(5) 1067-30.
Weight.—44 gr.

Obverse.	*Reverse.*
(4) as in (3)	جهان اباد
but ۲۷	شـــــــاه
(5) as in (3)	دارالخلافه
but ۳۰ to	ضرب
r. of ثانی	۱۰۶۳

(6) Alamgir Aurangzeb.
Mint.—Akbarābād.
Date.—1080-13.
Weight.—88 gr.

Obverse.	*Reverse.*
ه	
باد شا غازی	اکبر اباد
عالم گیر	ضرب
ثـــــــار	۱۰۸۰
سنه ۱۳	ســـنه

(7) As (6) but weight 44 gr. Date 1071-4.
(8) As (7) but Date 1073 [R.Y. missing].
(9) As (7) but Date 1077-10.

(10)

Obverse.	*Reverse.*
٥	
داد شا غازے	اباد
عالمگیر ۱۰۹۲	اکبـــــــر
نثـــــــــار	۲۵ ضرب

(11) As (7) but weight 22 gr. Date 1080-14.
(12) As (11) but Date 1071 [R.Y. missing].
(13) Alamgir Aurangzeb.
Mint.—Jahāngīrnagar.
Date.—R Y. 19.
Weight.—11 gr.

Obverse.	*Reverse.*
عالم گیر	جہانگیر [نگر]
شـــــــــاہ	
نثار باد	صر 19

23-9-18. H. NEVILL.

199. THE REIGN OF ALĀU-D-DĪN BAHMAN SHĀH.

Historians differ as to the date of the death of the first of the Kings of the Bahmani Dynasty of Kulbarga.

Ferishta says that the death of 'Alāu-d dīn Ḥasan happened eleven years two months and eleven days after his accession to the throne on the first of Rabīu-l-āwal 759 in the sixty-seventh year of his age.

The Burhān-i-Maāsir does not give the date of his death but follows Ferishta regarding the length of the reign

The Tazkaratu-l-Mulūk states that 'Alāu-d-dīn died in the year A.H. 761 and gives the period of his reign as thirteen years ten months and twenty-seven days.

In view of the difference in the record of these Indian Historians it is interesting to know that the Prince of Wales Museum, Bombay, has lately acquired under the Treasure Trove Act a Silver *Tanka* of 'Alāu-d-dīn dated 760 A.H.

The coin is of the normal type of No. 1 of "Gold and Silver coins of the Bahmani Dynasty" by the Hon. James Gibb published in the Numismatic Chronicle of 1881. Mr. Gibb's coin was dated 758 A.H. and similar specimens dated 757 and 758 were published in the J.A.S.B. 1909 by the late Mr. Framjee J. Thanawala. In describing the above specimens Mr. Thanawala took the central figure to be 4. In this he was undoubtedly wrong as the figure is 5. The coin referred to by Mr. Thanawala as being in possession of Mr. C. E. Kotwall is now in my cabinet and the centre figure is certainly 5, as is also the central figure of another coin of this king dated 758 which I also obtained from the latter gentleman. A reference to the plate published with Mr. Thanawala's article will also show that the figure is 5. Mr. Thanawala's collection contained another specimen dated 759. We thus can record silver *tankas* of this king dated 757, 758, 759 and 760, and although the latter is open to relegation to the class of "posthumous" I think, in view of the difference in the records of the historians quoted above, it is worthy of consideration. It may be noted that the earliest known coin of Muḥammad, the successor of 'Alāu-d-dīn, is also dated 760 (cf. Gibb No. 3); but a specimen of this king's coinage dated 759 A.H. is yet to be discovered to give confirmation to Ferishta's statement that 'Alāu-d-dīn died in 759 A.H.

H M. Whittell, *Captain.*
Indian Army.

Bombay, 1*st July* 1918.

Proceedings of the Annual Meeting, 1918.

The Annual Meeting of the Asiatic Society of Bengal was held on Wednesday, the 6th February, 1918, at 9-15 P.M

H. H. HAYDEN, Esq., C.I.E., D.Sc., B.A., F.R S., B.A.I., F.G.S., F.A.S.B., President, in the chair.

The following members were present :—

Dr. N. Annandale, Dr. P. J. Bruhl, Mr. E. Brunetti, Mr. J. A. Chapman, Dr. B. L. Chaudhuri, Dr. W. A. K. Christie, Miss M L Cleghorn, Mr. H. C. Das-Gupta, Rev. Father E. Francotte, S.J.. Mr. T. P. Ghose, Dr. F. H. Gravely, Mr. H. G. Graves, Mr. J. Insch, Mr. J. McLean, Rev. K. Oka, Mr. E. B. H. Panton, I.C.S., Mr. A. Raffin, Mahamahopadhyaya Haraprasad Shastri, C.I E., Aga Muhammad Kazim Shirazi, Maharaja Ranajit Sinha of Nasipur, Hon. Dr. A. Suhrawardy, Dr. Satis Chandra Vidyabhusana, Mr. E. Vredenburg.

Visitors :—Mr. N. A. Burnes, Mrs. J. A. Chapman, Miss O. Cleghorn, Miss B M. Cooper, Mr. F. J. Hartog, Babu Madhusudan Kaul, Pandit Babua Misra, Mr. R. Muir, Mr. Baine Prashad, Mr. H. Scholfield, Mr. M. Sharp, Lieut.-Col. E. G. Vaughan.

The President ordered the distribution of the voting papers for the election of Officers and Members of Council for 1918, and appointed Mr. E. Vredenburg and Aga Muhammad Kazim Shirazi to be scrutineers.

The President also ordered the distribution of the voting papers for the election of Fellows of the Society and appointed Dr. A. Meerwarth and Dr. B. L Chaudhuri to be scrutineers.

The President announced that the Elliott Prize for Scientific Research for the year 1917 will not be awarded as no Essays had been recieved in competition.

The Annual Report was then presented.

ANNUAL REPORT FOR 1917.

The Council of the Asiatic Society has the honour to submit the following report on the state of the Society's affairs during the year ending 31st December, 1917.

Member List.

The number of Ordinary Members at the close of 1917 was 378 against 407 at the close of 1916. The number of Ordinary Members elected during 1917 was 22. Out of these 4 have not yet paid their entrance fees, and one asked that his election might be cancelled. The number of Ordinary Members added is, therefore, 17. In addition 1 member elected in 1916 has paid his entrance fee during the year, making a total of 18 Ordinary Members added to the last list. On the other hand, 16 withdrew, 7 died, 10 were struck off under Rule 38, 10 were struck off under Rule 40, and 4 were struck off under Rule 41.

The number of Ordinary Members showed an unbroken yearly increase for a number of years to a maximum of 519 in 1911. Since this date there has been an unbroken and slightly more rapid decrease, as will be shown by the following tablular statement of the numbers of Ordinary Members for the past six years:—

YEAR.	PAYING.				NON-PAYING.			GRAND TOTAL.
	Resident.	Non-Resident.	Foreign.	Total.	Life.	Absent.	Total.	
1912	203	229	19	451	23	43	66	517
1913	200	211	19	430	23	46	69	499
1914	191	187	19	397	26	50	76	473
1915	171	188	21	380	25	40	65	445
1916	145	159	18	322	25	60	85	407
1917	150	144	15	309	24	45	69	378

The present number, 378, is the lowest since 1906 when it was 407, the number in 1905 being 357.

The following members died during the course of this year:—

Mr. James Hector Barnes, B.Sc.; Mr. John Gerald Gardner Gardner-Brown, M.A.; Dr. W. C. Hossack, M.D.; Mr. James Henry Little; Mr. Charles Russell, M.A.; Raja Ooday Pratab Singh, C.S.I.; and Mr. Framjee Jamesjee Thanawala.

A Sub-Committee was appointed to revise Rule 41 for the removal of members, and the Society accepted their recommendations, adding after the words "after being admonished by the President," the words "or if for any other reason it shall appear to the Council that the name of a member should not remain on the rolls," and deleting the words "for misconduct" from the margin.

No members compounded for their subscriptions during this year.

Among the Special Honorary Centenary Members, there has been one death, viz. that of Dr. Ernst Haeckel. The number is now 2.

Among the Honorary Fellows, there has also been one death, viz. that of Professor Hendrick Kern; and the names of Professor Theodor Noeldeke, Professor Ignaz Goldziher, Dr. H Oldenberg and Dr A. Engler have been struck off under Rule 41. Dr. Herbert A. Giles has been elected to fill one of the vacancies.

The total number of Honorary Fellows is now 22.

Among the Associate Members Rai Bahadur Sarat Chandra Das, C.I.E., has died; and the names of Rai Bahadur Balkrishna Atmaram Gupte and Dr. Herbert A. Giles have been removed, the former at his own request, and the latter on his having been elected an Honorary Fellow of the Society. The number of Associate Members is now 12.

The Council revised the rules for the appointment of Associate Members, and proposed to the Society the following addition to Rule 2 (*c*) "They shall be elected for a term of 5 years, but shall be eligible for re-election." This was adopted.

Fellows of the Society.

At the annual meeting held on the 7th February, 1917, G. C. Simpson, Esq., D.Sc., F.R.S., Lieut.-Col. W. D. Sutherland, I.M.S., and F. H. Gravely, Esq., D.Sc., were elected Fellows of the Society.

On Dr. G. T. Walker, F.R.S., resigning his Ordinary Membership of the Society, he ceased to be a Fellow under the Society's Rule 2A.

On the recommendation of the Fellows resident in Calcutta, certain modifications in the regulations regarding the election of Fellows were accepted by the Council of the Society.

In Rule 2A, the following sentence was added :—"Fellows shall be entitled to add to their names the initials F.A.S.B."

There were 35 Fellows on the list at the end of 1917.

Office-bearers.

There have been no changes among the Officers of the Society since the last annual election. Mr. H. Nevill has been Honorary Numismatist to the Society throughout the year, and Mr. C. J. Brown has reported on all Treasure Trove Coins sent to the Society from the Central Provinces.

Office.

Mr. J. H. Elliott has continued as Assistant Secretary throughout the year.

Babu Suresh Chandra Banerji, the Pandit of the Society, was granted one month's leave from 17th July, 1917 owing to ill-health.

The services of Maulavi Abu Musa Ahmadul-Haqq, Additional Travelling Maulavi attached to the Arabic and Persian Search Department, were dispensed with, owing to his absence from work from the 8th October, 1917, without leave. Shaikh Abu Nasr Gilani was appointed in his place from December 1st, 1917.

On the recommendation of the Joint Philological Secretary, Lama Lubsang-Yarphel was appointed from the 19th November, 1917 to copy the missing pages of the Society's Kangyur and Tangyur from the Tibetan set of the Calcutta University.

Maulavi Akhand Muhammad Sadiq was appointed from 7th September, 1917 to copy the damaged MSS. belonging to the Society. He continued until the end of October when his services were dispensed with. Maulavi Mohammad Karim-ullah was appointed in his place from the 17th November, 1917.

Society's Premises and Property.

The building of the new premises for the Society has not yet been taken in hand.

The Society's servants' quarters have fallen into very bad repair, and Rs. 419–10 has been provided for urgent work upon them.

At the suggestion of Dr. Annandale, the Society presented to Dr. A. Meerwarth, for the Petrograd Museum of Ethnography, a set of duplicate specimens of musical instruments, etc., the property of the Society, under the care of the Zoological Survey of India, in exchange for assistance rendered by him in the arrangement and cataloguing of the musical instruments in the collection of the Indian Museum.

Col. H. H. Godwin-Austen, F.R.S., has forwarded to the Society copies of photographs of Henry and William Blanford and Geoffrey Nevill. The Society has asked Col. Godwin-Austen to procure the photographs of Richard Lydekker and William Theobald.

Indian Museum.

No presentations were made to the Indian Museum.

During the year there has been no change in the Society's Trusteeship, the Hon'ble Justice Sir Asutosh Mukhopadhyaya, Kt., C.S.I., D.Sc., F.R.A.S., F.R.S.E., continuing to be a member of the Board of Trustees on behalf of the Society under the Indian Museum Act X of 1910.

The Trustees presented through the Government of India, a sum of Rs. 2,500 to enable the Society to publish the Catalogue of Scientific Serial Publications available in Calcutta, recently compiled by Mr. S. W. Kemp.

Indian Science Congress.

The Fourth Indian Science Congress was held in Bangalore on January 10th, 11th, 12th and 13th, 1917, under the presidency of Sir Alfred Bourne, K.C.I.E., D.Sc., F.R.S. The meetings were attended by about 270 members, and some 70 papers were communicated, abstracts of which have been published in our Proceedings, Vol. XIII, 1917, pages cxli-ccix.

It was arranged that the Fifth Indian Science Congress should be held at Lahore on January 9th, 10th, 11th and 12th, 1918. His Honour the Lieutenant-Governor of the Punjab, Sir Michael O'Dwyer, G.C.I.E., K.C.S.I., consented to be Patron. and Dr. G. T. Walker, C.S.I., F.R.S., was appointed President with Dr. J. L. Simonsen as Honorary Secretary and Mr. A. S. Hemmy of the Government College, Lahore, as Local Secretary.

Under the new rules for the Indian Science Congress the Honorary General Secretary and the Honorary Treasurer of the Asiatic Society are to be members of the Executive Committee of the Science Congress as long as the present relationship between the Society and the Congress persists.

Meetings.

The Society's General Meetings have been held regularly every month with the exception of the recess month of September. Under Council Order, the meeting for the recess month of October was held on Wednesday, the 3rd October 1917 at 5-30 P.M., instead of at 9-15 P.M.

Lecture.

Dr. A. H. Meerwarth of the Academy of Science, Petrograd, delivered a popular lecture on "Bhasa and his Dramas" in the Society's rooms on the 6th July, 1917. This was the only lecture delivered during the year.

Agencies.

Mr. Bernard Quaritch has continued as the Society's Agent in Europe.

No copies of the Journal and Proceedings, Memoirs or Bibliotheca Indica were sent to Mr. Quaritch for sale. owing to orders prohibiting the transmission of books for sale to Europe.

The two cases containing the Society's publications sent to Mr Otto Harrossowitz on the 9th July. 1914 per S.S. *Kattenturm* have not yet been recovered, and as the cost of obtaining delivery of the two cases would be very great, the Council has decided to take no further steps in the matter.

Barclay Memorial Medal.

On the recommendation of the Barclay Memorial Medal Special Committee, the Council awarded the Medal for 1917 to Lieut.-Col H. H Godwin-Austen, F.R S., in recognition of his biological researches.

A Committee was appointed to revise the rules of the Barclay Memorial Medal, and the Council approved of their recommendations.

Elliott Prize for Scientific Research.

Four essays on Chemistry were received in competition for the Elliott Prize for Scientific Research during 1916, and from the report furnished by the expert to whom they were sent for examination, the Trustees decided that none of the essays submitted was of sufficient merit to deserve a prize.

The subject selected for the Elliott Gold Medal for the year 1917 was Physical Science, and the Notification appeared in the Calcutta Gazette of the 17th January, 1917. No essay has been received in competition.

The Trustees modified the rules for the award of the Elliott Prize. The revised rules were sanctioned by Government, and published in the Calcutta Gazette dated 9th May, 1917. In terms of this Notification the subject selected for the year 1918 is Mathematics, and those for the four following years are Chemistry, Physics, Geology and Biology (including Pathology and Physiology), and Mathematics. This notification was published in the Calcutta Gazette dated 4th July 1917

Finance.

The appendix contains the usual statements showing the accounts of the Asiatic Society of Bengal, for the year 1917. In this year's accounts there are three additional statements under the heads "Fixed Deposit Bank of Bengal," "Treasury Bills," and "Catalogue of Scientific Serial Publications, Calcutta."

The Society has received the usual grants from the Governments of Bengal and India, except that O.P. Fund No. 2 ceased from the end of March In addition a special grant has been received from the Trustees of the Indian Museum, through the Government of India, for the publication of a Catalogue of Scientific Serial Publications available in Calcutta.

The amounts received were as follows :—

From Government of Bengal—	Rs.	*Vide* Statement
Oriental Publication Fund No. 1.	9,000	No. 2
Do. No. 2.	1,000	,, 3
Sanskrit MSS. Fund ..	5,600	,, 5
Anthropological Fund ..	2,000	,, 6
Bureau of Information ..	1,000	, 7
Total ..	18,800	

From Government of India—	Rs.	*Vide* Statement
Arabic and Persian MSS. Fund..	5,000	No. 9
Catalogue of Scientific Serial Publications, Calcutta ..	2,500	,, 14
Total ..	7,500	

As regards the Society's investments, which are shown in Statement No XVI, Government Securities of the face value of 2,59,300 are held by the Bank of Bengal for safe custody. These are made up of 3½% Government Promissory Notes of face value Rs 2,49,200, and 4% ditto of Rs. 10 100. They cost Rs. 2,56,663-8-10, the average purchase price being Rs. 98-12-9. The market price at the time of writing this report is nominally Rs. 69. In addition we have 3½% Government Promissory Notes of the face value of Rs. 500 in the custody of the Alliance Bank of Simla, Ltd., belonging to the Barclay Memorial Fund.

The Budget for the year 1917 was estimated at the following figures :—

	Rs.
Receipts	20,260[1]
Expenditure	25,958

Excluding admission fees, which ordinarily go to increase our Permanent Reserve, the actual receipts for the year, together with liabilities to the Society incurred by members, have amounted to Rs. 22,750 or Rs. 2,490 more than the estimate; but this is almost all accounted for by the return of Rs. 1,000 paid out in 1911 for the photographing of ancient documents, and by an underestimate of the receipts for sale of publications. Members' subscriptions amount to about Rs. 1,200 less than last year. Apart from this, actual receipts and expenditure have not differed widely from the estimates.

---

[1] Excluding admission fees estimated at Rs. 700.

The total expenditure for the year has amounted to Rs. 22,592, or nearly Rs. 3,400 less than the estimate, but we have liabilities outstanding which are estimated at about Rs. 6,800 or Rs. 4,000 more than those outstanding at the end of last year.

The Society's working balance (exclusive of all funds administered for Government) has been increased by Rs. 758 and stands at Rs. 20,650.

The Permanent Reserve Fund has been increased by Rs. 600 and stands at Rs. 1,67,600.

The Budget Estimate of probable Receipts and Expenditure for the year 1918 is as follows :—

	Rs.		Rs.
Receipts ..	21,300	Ordinary Expenditure.	20,494
		Extraordinary Expenditure	1,240
		Total ..	21,734

We therefore anticipate a loss of rather more than Rs. 400 on the year's working. This will have to be met from the temporary reserve.

BUDGET ESTIMATE FOR 1918.

Receipts.

[Including Outstanding Liabilities to the Society incurred by Members during the Year.]

	1917. Estimate.	1917. Actuals.	1918. Estimate.
	Rs.	Rs.	Rs.
Members' Subscriptions ..	10,000	9,490	9,000
Subscriptions for the Society's *Journal* and *Proceedings* and *Memoirs* ..	1,700	1,848	1,700
Sale of Publications ..	200	1,398	1,300
Interest on Investments ..	7,660	7,998	8,500
Rent of Room ..	600	600	600
Miscellaneous	100	244	200
Sale of Receipt Book ..	..	6	..
Travelling charges refunded	..	166	..
Advance refunded. ..	..	1,000	..
TOTAL ..	20,260	22,750	21,300

Expenditure.

	1917. Estimate.	1917. Actuals.	1918. Estimate.
	Rs.	Rs.	Rs.
Salaries	6,597	6,590	7,120
Commission	600	310	950
Pension	180	180	180
Stationery	200	101	150
Lights and Fans ..	225	274	280
Municipal Taxes ..	1,495	1,495	1,500
Postage	600	429	430
Freight	807	788	20
Contingencies	500	488	500
Books	2,000	534	500
Binding	700	672	700
To meet excess expenditure on publications already sanctioned	2,000	1,944	2,400
Journal and Memoirs (general expenditure) ..	2,000	635	1,000
Numismatic Supplement ..	600	50	300
Pahlavi fount (half cost) ..	..	..	140
Special Vol. of Memoirs ..	2,600	2,724	2,000
Proceedings	600	775	800
Indexes	200	138	800
Printing (Circulars, etc.) ..	350	366	360
Auditor's fee	150	150	150
Petty Repairs.. ..	75	1	10
Insurance	344	344	344
Grain Allowance ..	130	97	100
Furniture	300	45	..
Repairs	2,505	2,505	500
Servants' clothing ..	200	123	..
To Permanent Reserve ..	..	24	..
To Personal Account (Written off and Miscellaneous)	..	810	500
TOTAL ..	25,958	22,592	21,734

The Council desire to record their appreciation of the careful and lucid manner in which the accounts have been presented by Mr. R. D. Mehta, C.I.E., Hon. Treasurer, and Dr. F. H. Gravely, Hon. General Secretary.

Library.

The total number of volumes and parts of magazines added to the library during the year was 1,584, of which 232 were purchased and 1,352 either presented or received in exchange.

Mr. Fredun D. Mulla, Barrister-at-Law, Bombay, presented to the Society a collection of 33 works in 56 volumes.

Thirty-four manuscript copies of bardic books have been presented to the Society's library by the Political Member of the State Council, Bikaner, through the Resident of the Western Rajputana States, Jodhpur.

The Government of Bihar and Orissa forwarded 184 photographic reproductions of illustrations found in Arabic and Persian manuscripts in the Oriental Public Library at Bankipore, as a presentation to the Society's library.

The set of 200 photographs of the Sanchi Stupa presented to the Society by the Government of India has been mounted in 2 albums at a cost of Rs. 140.

Thanks to funds specially allotted by the Trustees of the Indian Museum, it has been possible to send to press the manuscript of the Catalogue of Scientific Serial Publications available in Calcutta. The whole of the matter is in type and under revision. It is hoped that the Catalogue will be published shortly.

The Council accepted the offer of the Librarian of the Imperial Library to supply a set of the Author and Subject Card-Catalogue of books in the Imperial Library for the use of the Society. A new cabinet has been purchased at a cost of Rs. 94-8 for a combined Author and Subject Catalogue of the additions to the Society's library and the Imperial Library.

On an application from the Bombay Branch of the Royal Asiatic Society, the Council has granted to the members of the Royal Asiatic Society of Great Britain and Ireland and its branches and Associate Societies, the use of the Society's library when they are temporarily in Calcutta. The necessary modification has been made to No. 17 of the Society's Library Regulations.

To avoid the risk involved in lending the Society's copper plates to members and outsiders it has been arranged with the Survey of India to obtain impressions, whenever required, of our old and valuable copper plates at the premises of the Society at a nominal charge payable by the applicant.

The Society's library is open to members daily from 10 A.M. to 5 P.M. The library is no longer kept open on Wednesday evenings until 7-30 P.M., as the demand for its use at this time had proved far too small to justify its continuance.

Publications.

Five numbers of the Journal and Proceedings (Vol. XIII, Nos. 1-5) were published during the year, containing 528 pages and 10 plates.

Four numbers of the Memoirs were published (Vol. V, Nos. 5-6; and Vol. VI, pages 75-182) containing 148 pages and 9 plates.

The Index to the Journal and Proceedings Vol. VIII, 1912, was published. The Index for Vol. IX, 1913, is in page proof and will be published early this year. The Index for Vol. X, 1914, has gone to press.

In connection with the publication of the Numismatic Supplement, a Pahlavi fount is being prepared, the Numismatic Society of India having promised to contribute half the cost

Exchange of Publications.

During the year the Council accepted two applications for exchange of publications, viz.: (1) from the Indian Association for the Cultivation of Science;—the Society's Journal and Proceedings and the Memoirs for their Bulletin, (2) from the Queensland Museum, Brisbane;—the Society's Journal and Proceedings and the Memoirs for their Annals. It was also decided to send this Museum the back vols. of the Society's Journal from 1891 to date, in exchange for publications already received

Philology, etc.

Mr. G. D. Sarkār contributed a paper containing some traditions about Sulṭān 'Alā'-ud-Dīn Ḥusayn S͟hāh, who became King of Bengal in the latter part of the 15th century A.D. From these traditions it appears that his early days were connected more closely with the northern part of the Murs͟hidābād district, than any other part of Bengal. The paper is illustrated with 11 inscriptions and 6 plates.

Maulavi 'Abdul Walī contributed the following papers: (1) On the Antiquities of Burdwān. These antiquities consist of the tombs of Pīr Bahrām, Quṭb-ud-Dīn, S͟her Afgan, K͟hwāja Anwār-i-S͟hahīd, and a Jāmi' Mosque erected by Sulṭān 'Azīm-us͟h-S͟hān, grandson of the Emperor Aurangzeb. The paper is illustrated with copies of inscriptions, found on the tombs and the mosque, and some Persian poems of Pīr Bahrām, who was also a poet. (2) 'Ālam K͟hān's mosque at Katwa in the Burdwān District. This mosque was built during Emperor Farruk͟h Siyar's reign by 'Ālam K͟hān in 1715 A.D. It has three inscriptions; copies of them are given in the paper. (3) On the Topk͟hāna mosque at Santipur in the Nadia District. It was built by Yār Muḥammad in 1694 A.D. during the reign of Aurangzeb. (4) On Madāran and Mubārak Manzil, two places of historical interest in the Hugli District. The former contains the ruins of a fort and tombs of saints, one of them belongs to S͟hāh Ismā'īl G͟hāzī, a warrior saint, who was beheaded and buried at Madāran, during the reign of Sultān 'Alā-ud-Dīn Ḥusayn Shāh of Bengal, who reigned from 1493 to 1518 A.D. About two miles south-east of Madāran, there are two huge gateways called Mubārak Manzil. They were constructed in

1730 A.D. by order of Nawāb S͟hujā'-ud-Daula, the Nā'ib-i-Dīwān in Orissa. The paper is illustrated with copies of inscriptions found on the tomb and the gateways.

Maulavi Hāfiz Nazīr Aḥmad, the First Travelling Maulavi, contributed the first instalment of notes on important Arabic and Persian MSS. with an introduction by the Hon. Dr. A. Al-Ma'mūn Suhrawardy Barrister-at-Law, Officer-in-charge of the Search for Arabic and Persian MSS. There are notes on 152 Arabic MSS. found by him in various libraries, book-stores, etc., scattered throughout India, and descriptive notes on 25 libraries visited by him.

Dr. L. P. Tessitori's "Progress-report on the work done during the year 1916 in connection with the Bardic and Historical Survey of Rajputana" will be read with great interest and profit.

Dr. A. M. Meerwarth, a Russian Orientalist, has contributed to the Journal a learned paper entitled "The Dramas of Bhāsa: a literary study" in which he gives a critical analysis of two of Bhāsa's historical plays named Pratijñā-yaugandharāyaṇa and Svapna-Vāsavadattam. Dr. Meerwarth does not deal with the question as to whether Bhāsa was the real author of these, or any of the thirteen plays ascribed to him and published in the Trivandrum Sanskrit series, nor does he enter upon discussions as to the date of Bhāsa beyond offering a suggestion that the great poet lived in or after the Kushan period.

Anthropology.

The following papers dealing with anthropology, using the term in a wide sense, have been published in the Journal during the year:—

"On some Indian Ceremonies for Disease-Transference" By Sarat Chandra Mitra, M.A., B L (Vol. XIII, No. 1, 1917.)

"Folklore in Caste Proverbs (Bombay Presidency)." By B. A. Gupta (Vol. XIII, No. 1, 1917.)

'On Secrecy and Silence in North Indian Agricultural Ceremonies." By Sarat Chandra Mitra, M.A., B.L. (Vol. XIII, 1917, No. 1.)

"Riddles Current in the District of Sylhet, in Eastern Bengal." By Sarat Chandra Mitra, M.A., B.L. (Vol. XIII, 1917, No. 3.)

Dr. N. Annandale has revived in the Memoirs the series entitled "Miscellanea Ethnographica" inaugurated by him in 1907, and has contributed to this series an account of the weighing apparatus used in the bazaars of the Southern Shan States, with notes by Dr. G. H. Meerwarth and Mr. H. G. Graves. Several exhibits of an anthropological nature have also been made at the meetings of the Society.

The anthropometric apparatus recently obtained by the Society from Switzerland has been in constant use in the Indian Museum, and it is hoped that the first instalment of the results obtained with its assistance may be ready for communication to the Society before long.

Biology.

ZOOLOGY.

The second and third parts of Dr. Annandale's "Zoological Results of a Tour in the Far East" have appeared in the Memoirs of the Society.

Part II contains :—

Aquatic Hemiptera from the Talé Sap in Peninsular Siam	C. A. Paiva.
Aquatic Oligochaeta from Japan and China	J. Stephenson.
Hydrozoa and Ctenophora ..	N. Annandale.
Batrachia	Do.

Part III contains :—

Hirudinea	Dr. R. Oka.
Mollusca Nudibranchiata (Ascoglossa)	Sir C. Eliot.

Lack of space forbids the mention of particular points of this work which abounds with morphological facts, and fascinating biological speculations.

Mr. Phelps published an interesting paper on the Habits of *Cyrtophora citricola.* He describes how this spider weaves its web and repairs rents in it.

Dr. G. A. Boulenger has published in the Memoirs a Revision of the Lizards of the Genus *Tachydromus*. *Tachydromus* is a genus of Lacertidae characteristic of the Far East, and the only one of the family that extends east of the Bay of Bengal. Owing to insufficient material, the relations of the various species have hitherto been very imperfectly understood, and the revision which Dr. Boulenger has now prepared was in consequence badly needed.

Eleven species are recognized in the genus and a key provided for their ready determination. Two forms hitherto placed in Tachydromus have been transferred to the new genera *Platyplacopus* and *Apeltonotus.*

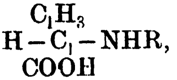
BOTANY.

Professor Fyson contributed an interesting paper on the Ecology of the Nilgiri and Pulney Highland Plateaus. These regions are of interest in relation to Ecological Problems on account of their isolation and the uniformity of the subsoil throughout the district. Professor Fyson regards the difference between species as ultimately a physiological one, the morphological characters being "Expressions of the living substance within." His observations on the habitat from *Knoxia mollis*, W. & A., are very interesting.

Professor Fyson has also contributed a paper on a Malformation of the Common Pine-apple (*Ananas sativus*, Schult.).

In a paper entitled Observations on Pollination in *Alysicarpus*, Mr. Cherian Jacob gives an interesting account of how the explosive pollination mechanisn in this genus brings about xenogamy, sometimes by aid of insects and sometimes without the aid of external agencies.

Physical Science.

Two chemical papers read at the Science Congress held in Bangalore at the beginning of the year have been published in our Journal. One of these papers was by Mr. Charles Stanley Gibson and Dr. John Lionel Simonsen on the stereochemistry of Alanine derivatives, the compounds selected for study being such as are easily prepared and beautifully crystallized. It was shown that increasing the mass of R in compounds of the type  $H-\overset{CH_3}{\overset{|}{\underset{\underset{COOH}{|}}{C}}}-NHR$, where R is an acyl group, increases the rotary power; but if CO is replaced by SO_2, a diminution of rotary power takes place.

The other paper was one by Mr. S. C. Chatterji on the detection of lactic and glycolic acids, with a suggestion regarding the constitution of morphine. As regards the latter subject the author produces some evidence in favour of the view that the nitrogen atom in morphine forms part of a five-membered ring and that it contains an indole group.

Prof. Hem Chandra Das-Gupta read at the Science Congress, and published in our Journal, a paper on the occurrence of Limburgite in British Baluchistan. The specimen of limburgite described was obtained from the Senonian of Eastern Baluchistan. The rock has a porphyritic structure, the phenocrysts being titaniferous augite and olivine and the groundmass consisting of lath-shaped microlites of felspars, augite and residual glass. The author arrives at the conclusion that a considerable portion of the limburgites are closely allied to the picrites.

Medical Section.

Owing to the continued absence at the war of a large number of the medical members only two meetings of the Medical Section have been held during the past year. At one of these Lt.-Colonel L. Rogers showed cases of leprosy treated by injections of sodium gynocardate with great improvement in most of them and complete disappearance of all the visible lesions in several. At another meeting Lt.-Colonel W. D. Sutherland, F.A.S.B., read a paper on criminal abortion, in which he advocated doing away with the penal laws against the practice as they were so seldom effectual. Dr. K. K. Chatterji also showed a number of cases of syphilis treated with injections of a soluble preparation made from neem oil with great benefit in many of them.

International Catalogue of Scientific Literature.

During the year no volumes of the Catalogue of Scientific Literature were received, although invoices were sent by the Central Bureau for several parts of the Catalogue. The work of the Regional Bureau has been chiefly confined to the preparation of a great number of Index slips; but with the exception of 138 slips these have not yet been despatched, as it is feared that want of funds is preventing the Central Bureau from publishing any volumes during the continuation of the war. A note stating this fact concerning the volume for Zoology appears in the Zoological Record for 1915 published in 1917.

The receipts and expenditure of the Regional Bureau for the year 1917 were Rs. 270 and Rs. 402-11-3 respectively.

Bureau of Information.

Several communications were received and have been replied to. The most important of these was the decipherment a mechanical copy of the Tezpur Rock Inscription received from the Commissioner of the Assam Valley Districts.

Sanskrit Manuscript Search and Catalogue.

The number of manuscripts catalogued up to date is 9,600, and it is hoped that by the end of March 1918 it will reach the round number 10,000. The Catalogue of 120 Buddhist MSS. prepared last year has now been published.

Owing to want of funds it has not yet been found possible to renew the search for manuscripts, or in any way to increase the size of the collection.

Arabic and Persian Manuscript Search and Catalogue.

During the year only one Persian MS., entitled Akẖbār-ul-Jamāl, a biographical work, was purchased on behalf of the Government of India. The first instalment of the notices on important Arabic and Persian MSS. found in various libraries in India, prepared by Maulavi Hāfiz Nazir Aḥmad under the supervision of the Hon. Dr. A. Suhrawardy, Barrister-at-Law. Officer-in-charge of the Search for Arabic and Persian MSS., has been published in the J.A.S.B., Vol. XIII, 1917, No. 2. The second instalment containing notices of 315 Persian and 5 Arabic MSS. has been sent to the press, and will be published with this report. This year the Maulavi visited three libraries in Murshidābād, but was unable to visit the Nawab's library, which was closed. The notices of MSS., with an account of the libraries, prepared by him form part of the second instalment. Maulavi Asad-al-Zaman Khan has revised and amplified the following sections of the Society's printed catalogue of Persian MSS.: (1) Commentaries on the Qur'ān, (2) Theology, (3) Dictionary, (4) Grammar, (5) History, (6) Fiction, (7) Poetry. Maulavi Shāh Muin-ud-Dīn has prepared an alphabetical list of 72 MSS. and printed books, presented to the Government of India by Nawab 'Azīz Jang of Hyderabad. Maulavi Abū Mūsā Aḥmad-ul-Ḥaqq has prepared a hand-list of the MSS. of the Government collection. It includes the Qur'ān, Tafsīr, Tajwid and Hadith.

Bibliotheca Indica.

The undermentioned texts have been published in the Bibliotheca Indica series during the year under review :—

1. A bilingual index of Nyāya-bindu, edited by M.M. Satis Chandra Vidyabhusana, M.A., Ph.D. It contains all the important technical and philosophical words of the Nyāya-bindu arranged in the alphabetical order in Sanskrit with Tibetan equivalents and in Tibetan with Sanskrit equivalents, together with an introduction dealing with the life of Dharmakīrti and peculiarities of his logic.
2. Bardic and Historical Survey of Rajputana, fasc. I, by Dr. L. P. Tessitori. It is a descriptive catalogue in English of the Prose Chronicles of Jodhpur State.
3. Bardic and Historical Survey of Rajputana, part I, by Dr. L. P. Tessitori. It contains the Ḍiṅgaḷa text of Vacanikā with notes and glossary
4. Akbarnāma, Vol. III, fasc. IX, translated from Persian into English by Mr. H. Beveridge, I.C.S. (retired).
5. Marhamu 'L-'Ilali 'L-Mu'dila, fasc. III, edited by Dr. E. D. Ross, C.I.E. It is a theological work.

Bardic Chronicles.

During the year all the operations of the Bardic and Historical Survey of Rajputana were regularly carried out according to plan, only the exploration of the district was not so extensive as it might have been, owing to Dr. Tessitori being left without travellers for about two and a half months in the rainy season. The publications of the Survey have begun to appear in the Bibliotheca Indica, and two are already out, viz.: the 1st fasciculus of the Descriptive Catalogue, i, i, and the Vacanikā Ratana Siṅghajī rī. Two other fasciculi of the Descriptive Catalogue have been printed and will shortly be out. Another bardic work, the Veli Krisana Rukamaṇī rī, composed by Rāṭhòṛa Prithī Rāja of Bikaner in the sixteenth century A.D., has been sent to press, and two more bardic works also relating to Bikaner are being prepared. A report on the work done during the year 1917, with appendixes. has been compiled by Dr. Tessitori for publication in the Journal as usual, but the Touring Report, containing an account of all the places and monuments of antiquarian interest explored by Dr Tessitori in the Bikaner territory, will be published in the "Annual" of the Archaeological Survey of India.

The number of the bardic manuscripts collected is 26, out of which 3 were presented, 14 were purchased, and 9 were copied. The number of the impressions of inscriptions collected is 213.

Coins

The additions to the coin cabinet of the Society during the year were of no great importance. Our thanks are, however, due to H.H. the Maharaja of Scindia for the gift of an interesting series of copper coins issued by the later Chāhamana princes of Narwar, and to H.H. the Maharaja of Jodhpur for a silver coin of the late Indo-Sāsānian type.

Two Numismatic Supplements were published and the contributions, with the exception of a note on two novelties in Gupta gold coins, were entirely the work of Mr Furdoonjee D. J. Paruck of Bombay and Mr. S. H. Hodivala of Junāgadh. The former was responsible for numerous articles of interest in connection with Sāsānian numismatics; while the latter afforded students of the Mughal period some very suggestive ideas on the subject of unidentified or disputed mint-towns.

During 1917, 11 hoards of coins have been received, examined and reported on. The following is a tabular analysis for the year :—

No. and metal.	Provenance.	Total No. of Coins.	Coins distributed	Coins sent to Nagpur.	REMARKS.
1 (**AR**)	**Narsinghpur**	**1249**	..	..	**Nagpuri rupees.**
2 (**AR**)	**Raipur**	**23**	**5**	**4**	**French E.I.C., etc.**
3 (**AR**)	**Narsinghpur**	**7**	..	..	**Mug̲h̲als, in very bad condition.**
4 (**AR**)	**Narsinghpur**	**14**	..	..	**Nagpuri rupees**
5 (**AR**)	**Akola**	**15**	..	..	**Mug̲h̲als, in very bad condition.**
6 (**AR**)	**Jubbulpore**	**50**	..	..	**Nagpuri rupees.**
7 (**AR**)	**Mandla**	**16**	**6**	**4**	**Mug̲h̲als.**
8 (**AR**)	**Damoh**	**105**	**62**	**52**	**Mug̲h̲als.**
9 (**AR**)	**Chanda**	**67**	**39**	**27**	**Mug̲h̲als.**
10 (**AR**)	**Hoshangabad**	**55**	**13**	**12**	**Mug̲h̲als.**
11 (**AR**)	**Bilaspur**	**87**	**67**	**40**	**Mug̲h̲als.**
	TOTAL	**1688**	**192**	**139**	

All the finds, as will be seen, were of silver coins. Find No. 11 was excellent in point of preservation and contained a Kām Bukhsh rupee of Bījāpūr 1119 aḥd. In find No. 9 was a Bījāpūr rupee of Aurangzeb 1091-23R with مجلوس instead of جلوس on the reverse. Find No. 8 contained a useful series of Korā mint of Muḥammad, Aḥmad and 'Ālamgīr II. The last is believed to be a new mint for this Emperor. There was also a Sironj rupee of 'Ālamgīr II in this find. On the whole the year has been rather disappointing. Three of the finds of Mughal coins were in very poor condition, being badly defaced by shroff marks. It would be a great help if the Nagpur and other museums would send lists of their collections and their acquirements.

Dr. H. H. Hayden, F.R.S., President, delivered an Address to the Society.

Annual Address, 1918.

The Annual Report of the Council for 1917 has been circulated to members, and I need not, therefore, deal further with it.

When the Asiatic Society was first established in 1784, its activities covered a very wide field and embraced every section of science, literature and art. For a long time most of the results of current scientific investigation in this country appeared in the publications of the Society, but as time went on, Government departments, each issuing its own publications, were created to deal with specific sciences; scientific literature in India, while greatly increasing in volume, has, at the same time, become more diffused and more highly specialized, and while our modern publications are in some respects more precise and more technical than those of a century ago, one cannot help feeling that we have gained in precision at the expense of human interest. This is the inevitable outcome of specialization, which again is the result of advance in scientific method. In a Society such as ours, therefore, it is not always easy to find a subject for an address which shall be of interest to the general body of members and shall not at the same time degenerate into a mere popular lecture. This is particularly so in the case of my own science, which is now a highly specialized and technical one. I have, therefore, chosen to-night a subject which lies on the borderland of more than one science and in which we have in this country a lively and persònal interest; that subject is seismology, and I propose to deal with the relationship between geology and earthquakes in India.

Earthquakes are divided broadly into two classes, volcanic and tectonic; the former are the accompaniments of volcanic disturbances, while those of the second class are due to strain in the earth's crust resulting in fracture. If we except Barren Island, recent volcanic phenomena are entirely unknown in India, and we are concerned only with earthquakes of the tectonic type. All our Indian earthquakes are therefore associated with strains in the earth's crust, often resulting in visible fractures, and where we find, geologically speaking, young fractures, we may expect also to experience earthquakes. Before going further, I may refer briefly to the processes to which fractures are due. The ultimate cause or causes are obscure and are still matter for speculation and controversy, and I do not propose to deal with those; but the proximate cause is stress affecting the outer crust of the earth and resulting either in movements accompanied by simple direct fracture in the outer shell or in fracture consequent on folding. Mountain ranges are due to the elevation of certain parts of the outer crust of the earth by the processes of folding and faulting; some mountains, like the Alps, are intensely folded; others, like the Himalaya, rather less so, while others again show practically no folding and are due to simple block faulting; most systems, however, combine all three phenomena. The Himalaya afford an especially good example of folding and faulting combined, for all along their southern edge they are bounded by a belt of fracture, known as the main boundary, which is a fault or succession of faults separating the main mass of the mountains from the lower hills of younger rocks, such as the Siwalik hills and the Tertiary ranges of the Kangra valley.

Geographically, as well as geologically, India falls into three broad subdivisions—the Indian Peninsula on one side, the Himalayan system on the other, and, between the two, a broad belt of alluvial plain. The Peninsular area is composed of crystalline rocks of great age, and is one of the oldest land surfaces in the world; the Himalaya, on the other hand, are, geologically speaking, a young mountain range, made up largely of rocks laid down under water and subsequently folded and raised from below the sea; they are, so to speak, the crumpled edge of the great plateau of Tibet. Still younger is the alluvial belt of the plains, which consists of beds of silt, sand and gravel, the materials for the formation of which have been, and are still being, carried down from the mountains by the great Himalayan rivers. Although we have no direct means of ascertaining the depth of this alluvial belt, both geological and geodetic observations lead us to believe that its thickness in places must be reckoned in miles; it is shallow on the south, and appears to deepen gradually northwards to the foot of the hills, where it merges into its more or less immediate predecessors, the youngest beds of the Tertiary system. To allow of the accumulation of such a vast thickness of alluvium, the base of the depression in which it lies must have sunk for a long period.

Although there is some doubt as to the underground form of the trough below the main mass of alluvium, there is none as to its relationship to the Himalaya, for its boundary is open to actual observation and is known to be the zone of fracture already referred to as the main boundary fault. Not one, but many faults parallel to the mountain foot have been traced; they stand as records of fractures that have occurred in the crust in comparatively recent geological times, and indicate planes of weakness along which movement may again take place. The Assam faults of the Shillong earthquake of 1897 bear witness that such movement still takes place from time to time. Further evidence of movement along the main boundary fault is also found in changes of relative level that took place in 1905, at the time of the Kangra earthquake, between Mussoorie and Dehra Dun.

Faults or fractures along and near the Himalayan mountain foot must, therefore, be regarded not only as planes on which movement has taken place in the past, but also as planes on or near which it may occur in the future. The crust of the earth in their neighbourhood is in a state of strain, and, when that strain reaches the point beyond which the crust is unable to withstand it, fracture takes place, and the consequent movement produces an earthquake. Although this might seem to imply that, wherever the crust is found to be traversed by numerous faults, earthquakes may be expected to occur, this is not actually the case; thus the great coal-bearing belt which runs across India from Bengal to the Central Provinces is bordered and intersected by faults, some representing very large displacements; yet this belt is not at present especially liable to earthquakes. This is due to the fact that the faults are, geologically speaking, very much older than those of the Himalayan zone, and that although in the distant geological past they were no doubt the *loci* of violent earthquakes, that part of the crust in which they occur has long since reached a period of comparative stability and quiescence, whereas the crust along the foot of the Himalaya is in a state of strain, being still affected by those mountain-building forces which, during the last geological period, produced the Himalayan system. So far as the rest of the Indian Peninsula is concerned, we should expect the great Archaean masses of the south, owing to their greater age and rigidity, to be even less liable to earthquakes than the rocks of the coalfields; and it is among the Himalayan and related mountain systems of young geological age, which include the mountains of Baluchistan on the west and of Manipur and Arrakan on the east, that we should expect to find fractures along which movement still takes place. This we know to be actually the case, and I will now go on to deal with the observations bearing on this subject that have been made in India during the last few years.

A considerable amount of information is available as to the earthquakes which have shaken India from time to time ; this was summarised and discussed some years ago by a well-known French seismologist, Major de Montessus, who published a map (Memoirs, Geol. Surv. of India, Vol. XXXV) showing the distribution of what he terms "seismicity" in India. Since his paper was published, we have continued to collect additional information in this country. Towards the end of 1908, arrangements were made by the Meteorological Reporter to the Government of India for earthquakes felt by the observers at his meteorological recording stations to be registered, and returns sent both to him and to the Geological Survey. The returns comprise only shocks alleged to have been felt by observers, and do not include shocks too slight to be recorded except by instruments. The returns are drawn up in the following form :—

1. Date of earthquake

2. Time of occurrence , if possible, exact standard time.

3 Duration of shock in seconds

4. Situation of observer, whether in or out of doors, asleep or awake, sitting or standing, etc.

5. Number of separate shocks, if more than one was felt.

6. Were any unusual sounds heard either before, during or after the shock, and what did they resemble ?

What was the intensity of the shock, whether strong enough :—
- (1) to be felt by persons at rest ;
- (2) to make doors, windows, etc., or loose objects rattle, and floors creak ;
- (3) to make hanging objects swing ;
- (4) to move the observer's seat ;
- (5) to throw down loose objects ;
- (6) to crack the walls of buildings ;
- (7) to cause greater damage (to be specified).

The last paragraph is intended to give an idea of the intensity of the shock; it is a simplification of the more elaborate Rossi-Forel scale, which has ten degrees instead of seven, and which is widely used to record the intensity of earthquakes. The scale shown is simple, but is sufficient for the purpose. A study of the returns received during the years 1909-1917 enables us to obtain what may be considered to be a reasonably correct idea of the relative "seismicity" of different parts of India during that period. The following table shows the stations at which more than 10 shocks are said to have been felt during the past nine years:—

	Number of shocks recorded in years 1909-1917.
Drosh	294
Chitral	83 (1909-1912 only)
Multan	11
Kyelang	14
Srinagar	28
Gulmarg	16
Murree	24
Sialkot	11
Lahore	16
Jodhpur	18
Abu	15
Muktesar	18
Shillong	130
Salona (Nowgong)	38
Borjuli	21
Mandalay	21

It will be seen that the shocks recorded at Drosh and Shillong are far more numerous than those at any other place. If we analyse the situations of these places, we find that in each case it is peculiar; each lies, in fact, in a region in which there is a rapid change in the direction of the trend-lines of the mountains, and in which more or less opposing sets of folds appear to meet. These would naturally be expected to be regions of unusual strain.

The returns from which the above figures are derived cannot, of course, be regarded as more than rough approximations, since one individual may perceive a shock which would not be felt or recorded by another. This is well illustrated by the returns received from Shillong; records of earthquakes occurring there are received by the Geological Survey of India from three separate sources; one of those sources furnishes only information of shocks recorded mechanically by a simple form of seismoscope consisting essentially of a weight suspended in such a manner as to leave it free to swing horizontally, its movements being recorded automatically by a needle working over a piece of smoked glass. Analysis of the returns received from each of the three sources during the years 1914-1917—calling the sources A, B and C respectively, A being the seismoscope—shows that the following number of shocks were recorded :—

by A (seismoscope)	53.
,, B ,,	61,
,, C ,,	40 ;

of these only seven shocks are common to all three sets of returns ; fifteen are common to A and B only, ten to B and C only and one to A and C only. The seismoscope recorded during the four years 29 shocks not recorded by either of the human sources, while the two latter recorded, respectively, 27 and 23 not felt by the others. At first sight this would seem to point to the returns being very unreliable; but, in a place like Shillong, where slight shocks are common one person frequently feels a shock not felt by his neighbour, and in spite of the discrepancies in the three sets of returns, I should not be inclined to discard the system, but it cannot be regarded as more than a very rough indication of the relative frequency of shocks. A summary of the records of the years 1909-1917 shows that the most active centres lie in the elbows where conflicting mountain trend-lines meet, in Assam on one side and in the North-West Frontier Province on the other, while the Peninsula has hardly been disturbed at all. The neighbourhood of the main boundary fault has been the chief zone of disturbance and was noticeable for the severe earthquake which occurred at Dharmsala in May, 1917. In 1912 a severe earthquake was felt in Upper Burma : it originated in a faulted region to the east of Maymyo, in the Nothern Shan States, and appears to have resulted from subterranean disturbance along or near an old fault-plane, the Kyauktan fault. Other severe earthquakes have originated in the Irrawady valley, which follows another zone of instability. On the west a severe earthquake occurred at Bellpat between Jacobabad and Sibi in 1909 ; here, again disturbance took place opposite a sudden bend in the mountain trend-lines.

It is unsafe to prophesy about earthquakes ; stresses may act in the crust for long periods without being perceived, and the first indication of their existence may be either a series of shocks or one shock of great intensity ; if the strain is relieved gradually, we may expect large numbers of small shocks, but if the rigidity of the crust is great and strain is relieved suddenly, a great earthquake results. Many small shocks may be regarded as rendering an area less liable to great shocks since they provide a safety-valve ; but the frequent recurrence of small shocks does not necessarily preclude the occasional occurrence of great shocks ; all we can say is that they probably reduce their number and intensity. A major shock is the result of relief of strain which has been accumulating for a long time, and it is a common belief—and a reasonable one—that a place which has suffered from one great earthquake is not likely to experience another for a considerable period This is borne out by our experience in India, although the great Dharamsala earthquake of 1905 was succeeded only twelve years later (May 10th, 1917) by a shock which was severe enough to throw down several houses and to damage others severely; the destruction, however, was due rather to the methods of construction employed in Dharmsala than to the violence of the shock.

Taken by themselves, the observations of Indian earthquakes recorded during the past nine years extend over much too short a period to justify us in drawing conclusions from their apparent tendencies, but when they are combined with the past seismological history of India, they confirm the conclusion that the Peninsula is remarkably stable, that most of our earthquakes are associated with the faulted zone along the Himalayan mountain foot or with the other young mountain ranges of Assam, Burma, Sind and Baluchistan, and that, although the plains frequently suffer from the effects of major shocks occurring in the latter zone, earthquakes of any magnitude do not often originate in or under the alluvial belt. In this respect, however, one part of the plains is exceptional, viz. the neighbourhood of Delhi; here the north-eastern end of the Aravalli range, the relics of a once great mountain system, juts out into the alluvium; opposite this point, across the Gangetic trough, is the Alaknanda valley which follows a zone of disturbance in the Himalaya. The forces which raised and folded the Aravalli mountains originally, belong to a period of such remote geological antiquity—long anterior to the disturbances which affected the now stable coalfields—that it is improbable that they should have persisted to the present day, and the causes of the high seismicity of Delhi and of the violent Muttra earthquake of 1803 are still obscure.

The President announced the election of Officers and Members of Council for the year 1918 to be as follows:—

President:

H. H. Hayden, Esq., C.I.E., D.Sc., B.A., B.A.I., F.G.S., F.A.S.B., F.R.S.

Vice-Presidents:

The Hon. Justice Sir Asutosh Mukhopadhyaya, Kt., C.S.I., D.L., D.Sc., F.R.S.E., F.R.A.S., F.A.S.B.
Lieut.-Col. Sir Leonard Rogers, Kt., C.I.E., M.D., B.S., F.R.C.P., F.R.C.S., F.A.S.B., F.R.S., I.M.S.

Mahamahopadhyaya Haraprasad Shastri, C.I.E., M.A., F.A.S.B.
N. Annandale, Esq., D.Sc., C.M.Z.S., F.L.S., F.A.S.B.

Secretary and Treasurer:

General Secretary:—F. H Gravely, Esq., D.Sc., F.A.S.B.
Treasurer:—R. D. Mehta, Esq., C.I.E.

Additional Secretaries:

Philological Secretary:—The Hon. Dr. A. Al-Ma'mun Suhrawardy, Iftikharul Millat, M.A. Ph.D., Bar-at-Law.
Natural History Secretaries:— Biology:—S. W. Kemp, Esq., B.A., F.A.S.B.
Physical Science:—W. A. K. Christie, Esq., B.Sc., Ph.D.
Anthropological Secretary:—N. Annandale, Esq., D.Sc., C.M.Z.S., F.L.S., F.A.S.B.
Joint Philological Secretary:—Mahamahopadhyaya Satis Chandra Vidyabhusana, M.A., Ph.D., F.A.S.B.
Medical Secretary:—Major D. McCay, M.D., I.M.S.
Honorary Librarian:—The Hon. Justice Sir Asutoh Mukhopadhyaya. Kt., C.S.I., D.L., D.Sc., F.R.S.E., F.R.A.S., F.A.S.B.

Other Members of Council:

The Hon'ble Mr. F. J. Monahan, I.C.S.
P. C. Ray, Esq., C.I.E., D.Sc.
A. H. Harley, Esq., M.A.
H. G. Graves, Esq., A.R.S.M.
G. H. Tipper, Esq , M.A., F.G.S., F.A.S.B.
P. J. Bruhl, Esq., D.Sc., I.S.O., F.C.S., F.G.S., F.A.S.B.

The President also announced the election of Fellows to be as follows:—

Colonel Sir Sidney G. Burrard, K.C.S.I., F.R.S.
J. L. Simonsen, Esq., Ph.D.
Lt.-Col. J. Stephenson, D.Sc., I.M.S.
Major D. McCay, M.D., I.M.S.
The Hon'ble Abdullah Al-ma'mun Suhrawardy, M.A., Ph.D.

The Meeting was then resolved into the Ordinary General Meeting.

LIST OF MEMBERS

OF THE

ASIATIC SOCIETY OF BENGAL.

ON THE 31ST DECEMBER, 1917.

LIST OF OFFICERS AND MEMBERS OF COUNCIL OF THE ASIATIC SOCIETY OF BENGAL FOR THE YEAR 1917.

President.

H. H. Hayden, Esq., C.I.E., D.Sc., B.A., F.R.S., B.E., B.A.I., F.G.S., F.A.S.B.

Vice-Presidents.

Lieut.-Col. Sir Leonard Rogers, Kt., C.I.E., M.D., B.S., F.R.C.P., F.R.C.S., F.A.S.B., F.R.S., I.M.S.
Mahāmahopādhyāya Haraprasād Shāstri, C.I.E., M.A., F.A.S.B.
N. Annandale, Esq., D.Sc., C.M.Z.S., F.L S., F A.S.B.
The Hon'ble Justice Sir J. G. Woodroffe, Kt., M.A., B.C.L.

Secretary and Treasurer.

General Secretary :—F. H. Gravely, Esq., D.Sc., F.A.S.B.
Treasurer :—R. D. Mehta, Esq., C.I.E.

Additional Secretaries.

Philological Secretary :—The Hon. A. Al-Ma'mūn Suhrawardy, Iftikhārul Millat, M.A., Ph.D., Bar-at-Law.
Natural History Secretaries.
  Biology :—H. G. Carter, Esq., M.B., Ch.B.
  Physical Science :—P. J. Brühl, Esq., D Sc., I.S.O., F.C.S., F.G.S., F.A.S.B.
Anthropological Secretary :—N. Annandale, Esq., D.Sc., C.M.Z.S., F.L.S., F.A.S.B.
Joint Philological Secretary :—Mahāmahopādhyāya Satis Chandra Vidyābhusana, M.A., Ph D., F.A.S.B.
Medical Secretary :—W. C. Hossack, Esq., M.D., D.P.H.
Honorary Librarian :—The Hon. Justice Sir Asutosh Mukhopadhyaya, Kt., C.S.I., D.L., D.Sc., F.R.S.E., F.R.A.S., F.A.S.B.

Other Members of Council.

Major D. McCay, M.B., I.M.S.
The Hon'ble Mr. F. J. Monahan, I.C.S.
P. C Ray, Esq., D.Sc., C.I.E
A. H. Harley, Esq., M.A.
H G. Graves, Esq., A.R.S.M.
S. W. Kemp, Esq., B.A., F.A.S.B.
G. H. Tipper, Esq., M.A., F.G.S., F.A.S.B.

LIST OF ORDINARY MEMBERS.

R. = Resident. N.R. = Non-Resident. A. = Absent. L.M. = Life Member.
F.M. = Foreign Member.

An Asterisk is prefixed to the names of the Fellows of the Society.

N.B.—Members who have changed their residence since the list was drawn up are requested to give intimation of such a change to the Honorary General Secretary, in order that the necessary alteration may be made in the subsequent edition. Errors or omissions in the following list should also be communicated to the Honorary General Secretary.

Members who are about to leave India and do not intend to return are particularly requested to notify to the Honorary General Secretary whether it is their desire to continue Members of the Society; otherwise, in accordance with Rule 40 of the rules, their names will be removed from the list at the expiration of three years from the time of their leaving India.

Date of Election.		
1909 Mar. 3.	N.R.	Abdul Latif, Syed, Deputy Magistrate. *Dacca.*
1917 April 4.	N.R.	Abdul Majid, B.A., M.R.A.S. *Golagunj, Lucknow.*
1894 Sept. 27.	L.M.	Abdul Wali, Khan Sahib Maulavi. 23, *European Asylum Lane, Calcutta.*
1912 Aug. 7.	N.R.	Abdulla-ul-Musawy, Syed, B.A., Zemindar *Bohar, Burdwan.*
1915 Feb. 3.	N.R.	Ahmad Ali Khan, Maulavi Hafiz, Superintendent, Rampur State Library. *Rampur.*
1914 Feb. 4.	R.	Ali Chaudhury, The Hon. Nawab Syed Nawab. 27, *Weston Street, Calcutta.*
1903 Oct. 28.	R.	Allan, Alexander Smith, M.B. 17 & 18, *Esplanade Mansions, Calcutta.*
1914 April 1.	N.R.	Ansari, Amir Ahmad, B.A. 26, *Banks Road, Lucknow.*
1893 Aug. 31.	A.	Anderson, Lieut.-Col. Adam Rivers Steele, B.A., M.B., D.P.H., C.M.Z.S., I.M.S. *Europe (c/o India Office).*
1912 July 3.	N.R.	Andrews, Egbert Arthur, B.A. *Tooklai Experimental Station, Cinnenara P.O., Jorhat, Assam.*
1916 Feb. 2.	R.	Andrews, William Edgar, B.A. (Oxon). 11, *Loudon Street, Calcutta.*
1904 Sept. 28.	R.	*Annandale, Nelson, D.Sc., C.M.Z.S., F.A.S.B., Director, Zoological Survey of India. *Calcutta.*

Date of Election		
1911 May 3.	R.	Atkinson, Albert Charles. *La Martiniere College*, 11, *Loudon Street, Calcutta.*
1904 July 6.	N.R.	Aulad Hasan, Sayid, *Khan Bahadur. Dacca.*
1917 April 4.	N.R.	Awati, P. R., M.A., Medical Entomologist, Central Research Institute. *Kasauli.*
1914 Mar. 4.	L.M.	Bacot, Mons. I. 31, *Quai d'Orsay, Paris.*
1870 Feb. 2.	L.M.	Baden-Powell, Baden Henry, M.A., C.I.E. *Ferlys Lodge*, 29, *Banbury Road, Oxford, England.*
1891 Mar. 4.	F.M.	Baillie, Sir Duncan Colvin, K.C.S.I., I.C.S. 89, *Queen's Gate, London.*
1909 Feb. 3.	N.R.	Banerji, Charu Deb, B.A., LL.B. *Allahabad.*
1905 Mar. 1.	R.	Banerji, Muralidhar. *Sanskrit College, Calcutta.*
1907 Jan. 2.	N.R.	Banerji, Rakhal Das, M.A., Supdt., Archaeological Survey. *Western Circle, Poona.*
1885 Nov. 4.	R.	Barman, Damodar Das. 55, *Clive Street, Calcutta.*
1898 Mar. 2	N.R.	Barnes, Herbert Charles, M.A., I.C.S., Deputy Commissioner, Naga Hills. *Kohima, Assam.*
1916 Sept. 27.	A.	Basdekas, Rev. Hilarion (*c/o Curate of the Greek Church, Calcutta*).
1909 July 7.	N.R.	Bazuz, Rangnath Khunraj. *Girgaon. Bombay.*
1895 July 3.	L.M.	Beatson-Bell, The Hon. Mr. Nicholas Dodd, B.A., C.I.E., I.C.S. *Shillong.*
1907 Feb. 6.	N.R.	Bell, Charles Alfred, C.M.G., I.C.S. *Gangtok, Sikkim.*
1915 April 7.	N.R.	Belvalkar, Sripad Krishna, M.A., Ph.D., Prof. of Sanskrit, Deccan College. *Poona.*
1909 April 7.	R.	Bently, Charles A., M.B., D.P.H. *Writers' Building, Calcutta.*
1876 Nov. 15.	F.M.	*Beveridge, Henry, F.A.S.B., I.C.S. (retired). *Pitfold, Shottermill, Haslemere, Surrey, England.*
1917 Aug. 1.	R.	Bhandarkar, Devadatta Ramkrishna, M.A 35/3, *Puddapukur Road, Ballygunj.*
1908 Nov. 4.	N.R.	Bhattacharji, Bisvesvar, Deputy Magistrate, Krishnagar. *Nadia.*
1909 July 7.	R.	Bhattacharji, Shib Nath, M.B. 17, *Mohonbagan Road, Calcutta.*
1914 Nov. 4.	N.R.	Bhattacharji, Vireshwar. *Navadvipa*

Date of Election.		
1910 May 4.	A.	Bishop, T. H., M.R.C.S., L.R.C.S., D.P.H. *Europe.*
1917 Feb. 7.	N.R.	Biswas, Jaminikanta, Zemindar. *Cuttack.*
1893 Feb. 1.	L.M.	Bodding, Revd P. O *Dumka Sonthal Parganas.*
1912 July 3.	N.R.	Bomford, Capt. Trevor Lawrence, I.M.S., M.B., B.S., M.R.C.S., L.R.C.P. (*c/o Rev. T. Bomford, C.M.S. House, Peshawar*).
1898 Feb. 2.	R.	Bose, Amrita Lal, Dramatist. 9-2, *Ram Chandra Maitra's Lane, Calcutta.*
1895 Mar. 6.	R.	*Bose, Sir Jagadis Chandra, Kt., C.S.I., M.A., D.Sc., C.I.E., F.A.S.B. *Presidency College, Calcutta.*
1917 Oct. 3.	R.	Bose, Satyendra Nath, M.Sc. *University College of Science, Calcutta.*
1914 Nov. 4	N.R.	Bose, Thakur Birendranath. *Dacca.*
1910 July 6.	N.R.	Botham, Arthur William, I.C.S. *Shillong.*
1911 Nov. 1.	A.	Boyle, Lieut. Cecil Alexander, 11th King Edward's Lancers (*c/o India Office, London*).
1908 Jan. 1.	R.	Brahmachari, Upendra Nath, M.A., M.D. 19, *Grey Street, Calcutta.*
1913 Aug. 6.	N.R.	Brown, C. J. *Canning College, Lucknow.*
1906 July 4.	R.	Brown, Lieut.-Col. Edwin Harold, M.D., I.M.S. (retired). 4, *Harrington Street, Calcutta.*
1907 July 3.	N.R.	Brown, John Coggin, M.Sc., F.G.S., F.C.S. (*c/o Geological Survey of India, Calcutta*).
1909 Oct. 6.	R.	Brown, Percy, A.R.C.A. *Government School of Art, Calcutta.*
1909 Oct. 6.	R.	*Brühl, Paul Johannes, D.Sc., I.S.O., F.C.S., F.G.S, F.A.S.B. 4, *Humayun Place, Calcutta.*
1901 June 5.	F.M.	*Burkill, Isaac Henry, M.A., F.A.S.B. *Botanical Gardens, Singapur.*
1896 Jan. 8.	F.M.	*Burn, Richard, C.I.E., I.C.S., F.A.S.B (*c/o Grindlay & Co.*, 54, *Parliament Street, London, S.W.*)
1913 Jan. 1.	N.R.	Burrard, Col. Sir S. G., K.C.S.I., C.S.I., F.R.S., Surveyor General of India. *Dehra Dun.*
1900 May 2.	N.R.	Butcher, Flora, M.D. *Tanakpur. R. & K. Railway, Pilibhit District.*
1913 Apl. 2.	R.	Calder, Charles Cumming. *Royal Botanic Gardens, Sibpur, Howrah.*
1907 Apl. 3.	R.	Calvert, Lieut.-Col. John Telfer, M.B, M.R.C.P., I.M.S. *Medical College, Calcutta.*

Date of Election		
1901 Mar. 6.	N.R.	Campbell, William Edgar Marmaduke, I.C.S. *Pilibhit, U.P.*
1895 July 3.	A.	Carlyle, Sir Robert Warrand, K.C.S.I., C.I.E., I.C.S. *Europe* (*c/o India Office*)
1912 Mar. 6.	A.	Carmichael, His Excellency the Right Hon'ble Thomas David, Baron of Skirling, G.C.I.E., K.C.M.G. (*c/o India Office, London*)
1915 Jany. 6.	R.	Carter, Humphry G., Economic Botanist to the Botanical Survey, Indian Museum. 27, *Chowringhee Road, Calcutta.*
1910 May 4.	A.	Carter, Capt. Robert Markham, I.M.S. *Europe* (*c/o India Office*).
1905 May 3.	R.	Chakravarti, Dwarkanath, M.A., B.L., Vakil, High Court. *Calcutta.*
1890 June 4.	N.R.	*Chakravarti, Rai Monmohan, Bahadur, M.A., B.L., F.A.S.B. *Comilla, Tipperah.*
1909 Mar. 3.	R	Chakravarti, Nilmani, M.A. *Presidency College. Calcutta.*
1905 July 5.	N.R.	Chakravarti, Vanamali. *Cotton College, Gauhati.*
1906 Jan. 3.	R.	Chapman, John Alexander, Librarian, Imperial Library. *Calcutta.*
1895 Oct. 27.	F.M.	Chatterjee, Atul Chandra, I.C.S., Royal Society's Club. *St. James' St., London, S.W.*
1908 Feb. 5	R.	Chatterjee, Gopal Chandra, M.B. *Medical College, Calcutta.*
1911 June 7.	R.	Chatterjee, Karuna Kumar, F.R C.S 74, *Dharamtola Street, Calcutta.*
1916 Jan. 5.	R.	Chatterjee, Khagendra Nath, B.A., B.L., Attorney-at-Law. 12, *Madan Mohan Chatterjee Lane, Calcutta.*
1907 Sept. 25.	R.	Chatterjee, Promode Prakas. 8, *Dixon Lane, Calcutta.*
1893 Sept 28.	R.	Chaudhuri, B L., B.A.. D.Sc. (Edin.), F.R.S.E., F.L.S. (Lond.). 120, *Lower Circular Road, Calcutta.*
1911 Mar. 1.	N.R.	Chaudhuri, Charu Chandra, Rai Bahadur, Zemindar, Sherpur Town. *Mymensingh Dist.*
1914 April 1.	R.	Chaudhuri, Gopal Das. 32, *Beadon Row, Calcutta.*
1913 June 4.	R.	Chaudhuri, P., Bar.-at-Law. 2, *Bright Street, Ballygunge, Calcutta.*

Date of Election.		
1907 July 3	R.	Christie, William Alexander Kynock, B.Sc., Ph.D., Chemist, Geological Survey of India. *Calcutta.*
1909 Nov. 3.	N.R	*Christophers, Major Samuel Richmond, M.B., F.A.S.B., I.M.S., Mesopotamia Field Force, c/o *Postmaster General, Bombay.*
1906 Nov. 7.	R.	Clarke, Geoffrey Roth, I.C.S., Postmaster General, Bengal.
1915 Sep. 1.	R.	Cleghorn, Maude Lina West F.L.S., F.E.S. 5. *Alipur Lane Calcutta.*
1908 Nov. 4.	A.	Cook, Capt. Lewis, I.M.S. *Europe* (*c/o India Office*).
1907 July 3.	R	Cotter, Gerald de Purcell, Assistant Superintendent, Geological Survey of India. *Calcutta.*
1908 Jan. 1.	R.	Crake, Dr. Herbert Milverton, Health Officer. 15. *Loudon Street, Calcutta.*
1876 Mar 1.	F.M.	Crawfurd, James, B.A., I.C.S. (retired). *Thornwood, Uddington, Lanarkshire, Scotland.*
1887 Aug. 25.	R.	Criper, William Risdon, F.C.S., F.I.C., A.R.S.M. *Konnagar, E.I.R.*
1895 July 3.	R.	Cumming, the Hon. Mr. John Ghest, C.I.E., I.C.S. 3, *Loudon Street, Calcutta.*
1873 Dec. 3.	F.M.	Dames, Mansel Longworth, I.C.S. (retired). *Ventnor, Wodeland Road, Guildford, Surrey, England.*
1915 Sep. 1.	R.	Das-Gupta, Hem Chandra, M.A., F.G.S., Prof., Presidency College. *Calcutta.*
1896 Mar. 4.	L.M.	Das-Gupta, Jogendra Nath, B.A. (Oxon), Barrister-at-Law. 38/2, *Lower Circular Road, Calcutta.*
1916 Dec. 6.	R.	Dasji, Sri Baman, Kaviraj, Ayurvedic and Unani Physician. 152, *Harrison Road, Calcutta.*
1912 April 3.	N R.	Das, Kasi Nath, Prof., Ravenshawe College. *Cuttack.*
1917 April 4.	R.	Datta, Rasik Lal, D.Sc., Asst. Professor, Calcutta University. 78, *Manicktola St., Calcutta.*
1910 Jan. 5.	R.	David, David A. 55, *Free School St., Calcutta.*
1895 Sept. 19.	N.R.	De, Kiran Chandra, B.A., I.C.S., Commissioner. *Chittagong.*
1900 Dec. 5.	R.	Deare, Lieut.-Col. Benjamin Hobbs, M.R.C.S. (Eng.), L.R.C.P. (Lond.), D.P.H. (Cantab), I.M.S. 14, *Russell Street, Calcutta.*

Date of Election.		
1917 June 6.	R.	Deb, Kumar Harit Krishna, M.A., Zemindar, Sobhabazar Rajbati. *Raja Navakrishna St., Calcutta.*
1904 Sept. 28.	N.R.	De Courcy, William Blennerhasset. *Leddlesdale Estate. Naduwatum P O., Nilgiris.*
1912 May 1.	A.	Demetriadi, Stephen. *Europe* (*c o Ralli Bros., Calcutta*).
1906 Dec. 5.	N.R.	Dentith, Arthur William, I.C.S. *Shillong.*
1916 Dec. 6.	R.	Dharmapala, Anagarika, Secretary, Mohabodhi Society. 4*a, College Square, Calcutta.*
1910 May 4.	L.M.	Dhavle, Sankara Balaji, I.C.S. *Lahiria Sarai, Darbhanga.*
1907 Oct. 30.	N.R.	Dixit. Pandit Sri Ram, B.A.. *Dewan of Banswara, Rajputana.*
1898 Jan. 5.	R.	Dods. William Kane, Agent, Hongkong and Shanghai Banking Corporation. *Calcutta.*
1909 Nov. 3	N.R	*Donovan, Lieut -Col. Charles, M.D., I.M.S., F.A.S.B. *Medical College, Madras.*
1917 Mar. 7.	N.R.	Dousamdup, Kazi, B.B. School. *Gangtok, Sikkim.*
1902 July 2.	R.	Doxey, Frederick. 9, *Queen's Park, Ballygunge, Calcutta*
1909 Aug. 4.	N.R.	Drake-Brockman, Digby Livingstone, I.C.S. *Jaunpur, U.P.*
1912 April 3.	N.R.	Duff-Sutherland-Dunbar, Capt. Sir George, Bart. 19th *Punjabis, Hyderabad, Sind.*
1917 June 6.	R.	Dunn, T. O. D., Educational Service *United Service Club. Calcutta.*
1914 Sept. 2.	R.	Dutt, B. C. 172, *Manicktola Street, Calcutta.*
1916 May 3.	N.R.	Dutt, Dharanidhar, B.A. *Nepal.*
1877 Aug. 30.	R.	Dutt, Kedar Nath. *Prasad Kutir Pitury's Ghat St., Kamarhati P.O.*
1910 April 6.	N.R.	Ebden, Capt. F. T. P. 73*rd Carnatic Infantry, Trichinopoly.*
1910 April 6.	R.	Elmes, Dr. Cecil H. 9/4, *Middleton Row, Calcutta.*
1911 Nov. 1.	R.	Esch, V. J.. Architect. *Victoria Memorial Building, Cathedral Avenue, Maidan, Calcutta.*
1915 Jany. 6.	N.R.	Fazl-i-Haqq, Q., M.A., Prof. of Persian Literature. *Govt. College, Lahore.*
1904 Aug. 3.	R.	*Fermor, Lewis Leigh, A.R.S.M., D.SC., F.G.S., F.A.S.B. Superintendent, Geological Survey of India. *Calcutta.*

Date of Election.		
1916 June 7.	R.	Ferrer, Joseph Orlando, Cuban Consul. 6, *Ezra Mansions, Calcutta.*
1906 Oct. 31.	N.R.	Finlow, Robert Steel, Fibre Expert to the Govt. of Assam *Dacca.*
1907 Mar. 6.	R.	Firminger, The Ven'ble Walter Kelly, M.A., B.D., F.R.G.S., Archdeacon of Calcutta *St. John's House, Council House Street, Calcutta.*
1910 Sept. 7.	A.	Fortescue, Capt. Archer Irvine, R.A.M.C. *Europe (c/o Army Dept., Simla).*
1913 Nov. 5.	A.	Fox, Lieut. Cyril S. (*c/o Geological Survey of India*).
1910 April 6.	A.	Francis, Lieut. Reginald, Frankland, Indian Army. (*c/o India Office, London*).
1903 Mar. 4.	R.	*Gage, Major Andrew Thomas, M.A., M.B., B.Sc., F.L.S., I.M.S. *Royal Bot. Gardens, Calcutta.*
1893 Jan. 11.	N.R	*Gait, His Honour Sir Edward Albert, K.C.S.I., C.S.I., C.I.E., I.C.S., Lieutenant-Governor of Bihar and Orissa. *Ranchi.*
1912 Mar. 6.	R.	Ganguli, Manmohan, B.E., District Engineer. *Mirzapur Street, Calcutta.*
1909 Oct. 7.	R.	Ganguli, Ordhendhu Kumar 12, *Ganguli's Lane, Calcutta.*
1916 May 3.	A.	Geuns, M. Van. *Europe.*
1905 July 5.	R.	Ghosh, Amulya Charan, *Vidyabhusana.* 82, *Manicktolla Street, Calcutta.*
1912 Aug. 7.	R.	Ghosh, Atal Behari, M.A., B.L. 59, *Sukea Street, Calcutta.*
1907 Mar. 6.	R.	Ghosh, Prafulla Chundra, M.A. *Presidency College, Calcutta.*
1869 Feb. 3	N.R.	Ghosh, Pratapa Chandra, B.A. *Vindyachal.*
1912 Sept. 4.	R.	Ghosh, Tarapada. 14, *Paddapuker Street, Kidderpur, Calcutta.*
1913 Dec. 3.	A.	Godson, Capt. Charles Aubery, I.M.S. *Europe (c/o India Office).*
1907 Mar. 6.	R.	Goenka, Roormall. 57, *Burtolla Street, Calcutta.*
1909 Jan. 6.	R.	Gourlay, William Robert, C.I.E., I.C.S. *Government House, Calcutta.*
1910 Sept. 7.	R.	*Gravely, Frederic Henry, D.Sc., Assistant Superintendent, Zoological Survey of India. *Calcutta.*
1905 May 3.	R.	Graves, Henry George, A.R.S.M. 1, *Council House Street, Calcutta.*

Date of Election		
1910 Nov. 2	N.R.	Graves-Law, H. D., I.C.S. Special Asstt. to the Resident in Kashmir. *Srinagar*.
1907 June 5.	A.	Green, Lieut.-Col. Charles Robert Mortimer, M.D., F.R.C.S., I.M.S. (*c/o India Office, London*).
1910 Mar. 2.	A.	*Greig, Major Edward David Wilson, M.B., I.M.S. *Europe* (*c/o India Office*).
1900 Dec. 5.	L.M.	Grieve, James Wyndham Alleyne, Deputy Conservator of Forests. *Jalpaiguri*.
1917 Feb. 7.	R.	Guha, Regina B.A., B.L. 9, *Marquis St., Calcutta*
1917 June 6.	N R.	Gupta Kisorimohan, M.A., Prof. of History, M.C. College. *Sylhet, Assam*.
1915 Aug. 4.	R.	Gurner, C. W., I.C.S. *United Service Club, Calcutta*
1901 Mar. 6.	N.R.	Habibur Rahman Khan Maulavi, Raees. *Bhikanpur. District Aligarh.*
1892 Jan 6.	F.M.	Haig, Lieut. Col Wolseley, Indian Army. H. B. M.'s Consulate Genl. *Meshhed, Persia*.
1907 Aug. 7.	N.R.	*Haines, Henry Haselfoot, F.C.H., F.L.S. *Ranchi*.
1908 June 3.	R.	Hallowes, Kenneth Alexander Knight, B.A., A.R.S.M., F.G.S., Assistant Superintendent, Geological Survey of India. *Calcutta*.
1916 Jan. 5.	R.	Hamilton, C. J., 9, Middleton Street, Calcutta.
1913 May 7.	N.R.	Hankin, E. H., M.A., D.Sc. *Agra*.
1885 Feb. 4.	L.M.	*Haraprasad Shastri, Mahamahopadhyaya, C.I.E., M.A., F.A.S.B. 26, *Pataldanga Street, Calcutta*.
1902 Dec. 3.	N.R.	Harnarain Goswami, Shastri. *Hindu College, Delhi*.
1912 May 1.	R.	Harley, A. H., M.A. *Madrassa, Calcutta*.
1906 Dec. 5.	A.	Harris, Lieut. G., 56*th Infantry, F.F.* (*c/o India Office, London*).
1908 April 1	N.R.	Harrison, Edward Philip, Ph.D, F.R.S.E. *Sialkot*.
1916 Feb. 2.	N.R	Hashmi, Mohammad Yusuf, M.A. *P.O Kila Sobhasingh, Dist. Sialkot*.
1897 Feb. 3.	R.	*Hayden, Henry Herbert, C.I.E., D.Sc., B.A., B.E., B.A.I., F.G.S., F.A.S.B Director, Geological Survey of India. *Calcutta*.
1911 June 7.	R.	Hedayat Husain, Muhammad. 7-1, *Ramsanker Roy's Lane, Calcutta*.
1908 June 3.	N.R.	Heron, Alexander Macmillan, B.Sc. (*c/o Geological Survey of India, Calcutta*).

Date of Election		
1911 April 5.	N.R.	Hiralal, Rai Bahadur, B.A., M.R.A.S. *Damoh, C.P.*
1908 April 1	A.	Hirst, Captain Frederick Christian. *Indian Army (c/o Survey of India).*
1891 July 1.	N.R.	*Holland, Sir Thomas Henry, K.C.I.E., D.Sc., A.R.C.S., F.G.S., F.R.S., F.A.S.B. *Simla.*
1908 July 1.	A.	Holmwood, The Hon. Mr. Justice Herbert, I.C.S. *Europe (c/o India Office).*
1910 Jan. 5.	R.	Hope, Geoffroy D., B.Sc., Ph.D. 27, *Chowringhee Road, Calcutta.*
1914 Feb. 4	R.	Hornell, The Hon. Mr. W. W., Director of Public Instruction, Bengal. *Writers' Building, Calcutta.*
1873 Jan 2.	L.M.	Houstoun, George L., F.G.S. *Johnstone Castle, Renfrewshire, Scotland.*
1911 Feb. 1	R.	Insch, Jas. 101, *Clive Street, Calcutta.*
1915 April 7	N.R	Ishak Khan, Maulavi Mahomed. *M. A. O. College, Aligarh.*
1904 Jan 6.	N R.	Jackson, Victor Herbert M.A. *Patna College, Bankipur.*
1916 Jan. 5.	N R	Jain, Kumar Devendra Prasad, Secy. All-India Jain Association. *Arrah.*
1907 Dec. 4	A.	James, Henry Rosher, M.A., Bengal Education Service. *Europe (c/o India Office).*
1907 Sept. 25.	R.	Jenkins, Owen Francis, I.C.S. 1, *Council House Street, Calcutta.*
1908 June 3	R.	Jones, Herbert Cecil, A.R.S.M., A.R.C.S., F.G.S. *Assistant Superintendent, Geological Survey of India, Calcutta.*
1911 Sept. 1.	N.R.	Juggarao, Sree Raja Ankitam Venkata *Zemindar of Shermahamadpuram, Dabagardens, Vizagapatam.*
1911 Nov. 1.	A.	Kamaluddin Ahmed, Shams-ul-Ulama. *Europe (c/o Govt. Madrassa, Chittagong).*
1915 Oct. 27.	N.R.	Kaushala, R. S. *Ambala City.*
1891 Feb. 4.	N.R.	Kapur, Raja Ban Behari, C.S.I. *Burdwan.*
1911 Jan. 1.	N.R.	Kaye George Rusby. *Registrar, Bureau of Education, Simla.*
1910 May 4.	R.	*Kemp, Stanley W., B.A., F.A.S.B., Superintendent, Zoological Survey of India. *Calcutta.*
1882 Mar. 1.	N.R.	Kennedy, Pringle, M.A., B.L., Vakil. [*Mozufferpur.*
1906 Aug. 1.	R.	Kennedy, William Willoughby, M.A., M.D., D.P.H., M.R.S.C., L.R.C.P. 10, *Harrington St., Calcutta.*

Date of Election.		
1906 Sept. 19.	R.	Kesteven, The Hon. Mr. Charles Henry, Solicitor to Government. 26, *Dalhousie Square, Calcutta.*
1909 April 7.	R.	Kilner, John Newport, M.B., L.R.C.S., L.R.C.P. 14, *Garden Reach, Calcutta.*
1910 Mar. 2.	R.	Kirkpatrick, W. *Chartered Bank Buildings, Calcutta.*
1914 April 1.	N.R.	Laddu, Tukaram Krishna. *Queen's College, Benares.*
1887 May 4.	L.M.	Lanman, Charles Rockwell. 9, *Farrar Street, Cambridge, Massachusetts, U.S. America.*
1889 Mar. 6.	L.M.	*La Touche, Thomas Henry Digges, B.A., F.G.S., F.A.S.B. *Alfriston Hills Road, Cambridge, England.*
1914 Aug. 5.	R.	Law, Bimala Charan, B.A. 24. *Sukea St., Calcutta.*
1911 Feb. 1.	R.	Law, Narendra Nath, M.A., B.L. 96, *Amherst St., Calcutta.*
1914 July 1.	R.	Law, Satya Charan, M.A., B.L. 24, *Sukea St., Calcutta.*
1902 July 2.	N.R.	Leake, Henry Martin, M.A., F.L.S. *Nawabgunj, Cawnpore.*
1911 May 3.	R.	Lomax, C.E., M.A. 11, *Loudon Street, Calcutta.*
1906 Oct. 31.	N.R.	Luard, Capt. Charles Eckford M.A. (Oxon), Indian Army. *Nimach.*
1870 April 7.	L.M.	Lyman, B. Smith. 708 *Locust Street, Philadelphia, U.S. America.*
1905 Aug. 2.	R.	McCay, Major David, M.D., I.M.S. *Medical College, Calcutta.*
1916 July 5.	N.R.	MacKenna, J., I.C.S., Agricultural Adviser to the Government of India. *Pusa.*
1893 Jan. 11.	L.M.	Maclagan, The Hon. Sir Edward Douglas, M.A., K.C.I.E., C.S.I., I.C.S., Secretary, Government of India, Education Department. *Simla.*
1912 May 1.	R.	McLean, David. *Chowringhee Mansions, Calcutta.*
1913 Mar. 5.	A.	MacMahon, P. S. *Europe* (*c/o Canning College, Lucknow*).
1893 Jan. 11.	L.M.	Madho Rao Scindia, His Highness Maharajah Colonel Sir, *Alijah Bahadur,* G.C.S.I., G.C.V.O., A.D.C., LL.D., Maharajah of Gwalior. *Jai Bilas, Gwalior.*
1916 June 7.	N.R.	Mahajan, Surya Prasad. *Murarpur, Gaya.*

Date of Election.		
1906 Dec. 5.	R.	Mahalanobis, Subodh Chandra B.SC., F.R.S.E., F.R.M.S. 210, *Cornwallis Street, Calcutta.*
1911 Mar. 1.	R.	Mahatap, The Hon. Sir Bijoy Chand, K.C.S.I., Maharajadhiraj of Burdwan. 6, *Alipur Lane, Calcutta.*
1898 Nov. 2.	N.R	Maitra, Akshaya Kumar, B.A., B.L. *Rajshahi.*
1901 June 5.	N.R.	Mann, Harold Hart, D.SC., M.SC., F.L.S., Principal, Agricultural College. *Poona.*
1907 Dec. 4.	N.R.	Manners-Smith, Lieut.-Col. John, C.V.O., C.I.E., Indian Army. *Resident. Kashmir.*
1899 Aug. 30.	N.R.	Mannu Lal, Rai Bahadur, Retired Civil Surgeon. *Rai Bareli.*
1905 Dec. 6.	F.M.	Marsden, Edmund, B.A., F.R.G.S. 12, *Elerdale Road, Hampstead, London.*
1916 Feb. 2.	R.	Majumdar, Narendra Kumar. M.A., Asst. Prof. Calcutta University. *Calcutta.*
1912 Jan. 10.	N.R.	Mazumdar, Rai Jadunath, Bahadur, Government Pleader. *Jessore.*
1913 June 4.	R.	Mazumdar, Ramesh Chandra. M.A., 16, *Chandranath Chatterji Street Bhowanipur, Calcutta.*
1917 May 2.	R.	Meerwarth, Dr. A. M. 92, *Elliott Road, Calcutta.*
1886 Mar. 3.	L.M.	Mehta, Roostumjee Dhunjibhoy, C.I.E. 9, *Rainey Park Ballygunge, Calcutta.*
1884 Nov. 5.	N.R.	*Middlemiss, Charles Stewart. B.A., F.G.S., F.A.S.B. *Kashmir, Srinagar.*
1884 Sept. 3	R.	Miles, William Harry. 21, *Old Court House Street, Calcutta.*
1912 June 5.	N.R.	Misra, Champaram. *Partabgarh, Oudh.*
1911 July 5.	N.R.	Misra, Rai Bahadur Pandit Shyam Behari, B.A., I.C.S., Deputy Collector. *Unao, Oudh.*
1916 Nov. 1	R.	Mitra, Adar Chandra, B.L. *Bow St., Calcutta.*
1906 June 6.	R.	Mitra, Kumar Manmatha Nath. 34, *Shampukur Street, Calcutta.*
1915 Jan. 6.	R.	Mitra, Prakash Chandra, Engineer and Contractor.' 16*a*, *Amherst Street, Calcutta.*
1909 May 5.	N.R.	Mohyuddin Ahmad, Maulavi Abul-Kalam, Azad. *Ranchi.*
1901 Aug. 7.	N.R,	Molony, Edmund Alexander, I.C.S. *Allahabad.*
1895 July 3.	R.	Monahan, The Hon. Mr. Francis John, I.C.S. *Harrington Mansions, Calcutta.*

ate of Election		
1906 Dec. 5.	N.R.	More, Major James Carmichael 51st Sikhs. General Headquarters, I.E.F. (D). (*c/o Presidency Post Master Bombay*).
1908 Dec. 2	A.	Moses, Capt. Owen St. John, M.D., F.R.C.S., I.M.S. *Europe* (*c/o India Office*).
1912 Jan. 10.	R.	Muhammad Kazim Shirazi, Aga. 23, *Lower Chitpur Road, Calcutta.*
1909 Mar. 3.	R.	Mukerjee, Brajalal, M.A. 12, *Old Post Office Street, Calcutta.*
1916 Jan. 5.	R.	Mukerjee, Harendra Kumar, Asst. Prof. Calcutta University. *Calcutta.*
1899 Sept. 29.	R.	Mukerjee, Jotindra Nath, B.A., Solicitor. 3, *Old Post Office Street, Calcutta.*
1916 Mar. 1.	R.	Mukerjee, Prabhat Kumar, Bar.-at-Law. 14*a*, *Ramtanoo Bose Lane, Calcutta.*
1898 May 4	R.	Mukerjee, Sir Rajendra Nath, K.C.I.E. 7, *Harrington Street, Calcutta.*
1894 Aug. 30	R.	Mukerjee, Sibnarayan. *Uttarpara, Bally.*
1886 May 5	L.M.	*Mukhopadhyaya, The Hon. Justice Sir Asutosh, Kt., C.S.I., M.A., D.L., D.Sc., F.R.S.E., F.R.A.S., F.A.S.B., Judge, High Court. *Calcutta.*
1908 Feb. 5	R	Mukhopadhyaya, Girindra Nath, B.A., M.D. 156, *Haris Mukerjee Road, Bhowanipur, Calcutta.*
1892 Dec. 7.	R.	Mukhopadhyaya, Panchanan. 46 *Bechoo Chatterji's Street, Calcutta.*
1910 Nov 2.	A	Murray, William Alfred, B.A. (Cantab), M.B. *Europe* (*c/o Assam Bengal Railway, Chittagong*).
1906 Mar. 7.	R.	Nahar, Puran Chand. 48, *Indian Mirror Street, Calcutta.*
1916 July 5.	R.	Naseer Hosein Khankhayab, Syed. 78, *Prinsep St., Calcutta.*
1914 Feb. 4.	N.R.	Neogi, Panchanan. *Rajshahi College, Rajshahi.*
1917 Mar. 7.	N.R.	Newton, Rev. R. P., M.A., Chaplain, Bengal Ecclesiastical Establishment. *Dinapur.*
1901 Mar. 6.	N.R.	Nevill, Lieut.-Col. Henry Rivers, I.C.S., Army Headquarters., 4, *Khyber Pass, Delhi.*
1889 Aug. 29.	L.M.	Nimmo, John Duncan. *c/o Messrs. Walter Duncan & Co.*, 137, *West George Street, Glasgow.*
1913 July 2	N.R.	Norton, E. L., I.C.S., District Magistrate. *Orient Club Building Chowpatti, Bombay.*

Date of Election.		
1908 Feb. 5.	A.	Nott, Lieut.-Col. Arthur Holbrook, M.D., I.M.S. *Europe* (*c/o India Office*).
1916 Feb. 2.	R.	Oka, Rev. R. *c/o Bangae & Co.*, 35, *Park Mansions*, *Calcutta.*
1906 Dec. 5.	R.	O'Kinealy, Lieut.-Col. Frederick, M.R.C.S., (Eng.), L.R.C.P. (Lond.), I.M.S. *Presidency General Hospital*, *Calcutta.*
1915 April 7.	R.	Otani, Count Kozui. *c/o Consulate-General of Japan*, *Calcutta.*
1907 July 3.	A.	Page, William Walter Keigley. *Europe* (*c/o Pugh & Co.*, *Calcutta*).
1901 Jan. 2.	N.R	Pande, Ramavatar, B.A., I.C.S., District Judge. *Mirzapur*, *U.P.*
1901 Aug. 28.	R.	Panton, The Hon. Mr. Edward Brooks Henderson, B.A., I.C.S. *High Court*, *Calcutta.*
1904 Aug. 3.	N.R.	Parasnis, Rao Bahadur Dattatraya Balwant. *Satara.*
1910 April 6.	N.R.	Patuck, Pestonji Sorabji I.C.S. *Narsinghpur.*
1906 Dec. 5.	N.R.	Peart, Major Charles Lubé. 106*th Hazara Pioneers*, *Quetta.*
1916 July 5.	N.R	Pease, Col. H. T., C.I.E., M.R.C.V.S. *Veterinary College*, *Lahore.*
1888 June 6.	L.M.	Pennell Aubray Percival, B.A., Bar.-at-Law. *Rangoon.*
1877 Aug. 1.	N.R	Peters, Lieut.-Col. Charles Thomas, M.B., I.M.S. (retired). *Dinajpur.*
1915 May 5.	A.	Philby, H. St. J. B., I.C.S. *Europe* (*c/o Alliance Bank*, *Calcutta*).
1889 Nov. 6.	L.M.	*Phillott, Lieut.-Colonel Douglas Craven, Ph.D., F.A.S.B. *Indian Army* (*retired*). c/o Messrs. Grindlay & Co., 54, *Parliament Street*, *London.*
1914 Nov. 4.	R.	Pickford Alfred Donald. 12, *Mission Row*, *Calcutta*
1904 June 1.	N.R.	Pilgrim, Guy Ellcock, D.Sc., F.G.S. (*c/o Geological Survey of India*, *Calcutta*).
1910 Aug. 3.	R	Podamraj Jain, Raniwalla. 9, *Joggomohan Mullick's Lane*, *Calcutta.*
1914 Mar. 4.	N.R.	Raffin, Alain. *Burdwan.*
1880 April 7.	N.R.	Rai, Bepin Chandra. *Giridih*, *Chota Nagpur.*
1895 Aug. 29.	N.R.	Rai Chaudhuri, Jatindranath M.A., B.L., Zemindar. *Taki*, *Jessore.*
1908 Feb. 5.	N.R.	Randle, Herbert Neil, B.A. *Queen's College*, *Benares.*

Date of Election.		
1917 June 6.	N.R.	Rangaswami Aiyangar, K. V., Rao Bahadur, Prof. of History and Economics, H.H. The Maharaja's College. *Trivandrum.*
1905 Jan. 4.	N.R.	Rankin, James Thomas, I.C.S. *Darjeeling.*
1904 Mar. 4	F.M.	Rapson, E. J. 8, *Mortimer Road, Cambridge.*
1890 Mar. 5.	R.	*Ray, Prafulla Chandra. D.Sc., F.A.S.B., Professor, Presidency College. *Calcutta.*
1917 May 2.	R.	Ray, Dr. Kumud Sankar, M.A., B.Sc., M.B., Ch.B (Edin.). 44, *European Asylum Lane, Calcutta.*
1905 May 3.	R.	Richardson, The Hon. Mr. Justice Thomas William, I.C.S. 21, *Belvedere Road, Calcutta.*
1913 Sept. 3.	A.	Rogalsky, P. A. *Europe (c/o Imperial Russian Consulate General, Calcutta).*
1903 Mar. 4.	N.R.	Rogers, Charles Gilbert, F.L.S., F.C.H. Forest Department (*c/o Grindlay & Co., Calcutta*).
1900 April 4.	R.	*Rogers, Lt.-Col. Sir Leonard, Kt., C.I.E., M.D., B.S., F.R.C.P., F.R.C.S., F.A.S.B., F.R.S., I.M.S. *Medical College, Calcutta.*
1901 Dec. 4.	F.M.	*Ross, Edward Denison, C.I.E., Ph.D., F.A.S.B., Director, School of Oriental Studies. *London.*
1889 June 5.	N.R.	Roy, Maharaja Girijanath. *Dinagepore.*
1903 July 1.	L.M.	Roy, Maharaja Jagadindranath, *Bahadur.* 6, *Lansdowne Road, Calcutta.*
1915 Oct. 27.	R.	Roy, Kaviraj Jamini Bhusan. M.A., M.B. 46, *Beadon St., Calcutta.*
1917 May 2.	R.	Roy. Kiran Sankar, B.A. (Oxon), Prof. of History, Sanskrit College. 44, *European Asylum Lane, Calcutta.*
1910 Sept. 7.	N.R.	Roy, Kumar Sarat Kumar. *Dayarampur, Rajshahi*
1915 April 7.	R.	Roy, Hon. Mr. Surendra Nath, Vakil, High Court. *Calcutta.*
1909 Nov. 3.	N.R.	Roychaudhury Mritunjoy. *Shyampur P.O., Rungpur.*
1917 Oct. 3.	R.	Saha, Meghnad. M.Sc., University College of Science. *Calcutta.*
1916 April 5.	N.R.	Saha, Radha Nath. 16, *Lachmikundu, Benares City.*
1913 Apl. 2.	N.R.	Sahay. Rai Sahib Bhagvati, M.A., B.L., Offg. Inspector of Schools, Patna Division. *Bankipur.*

Date of Election.		
1911 Nov. 1.	N.R.	Sahni, Dayaram, M.A., Supdt. of Archæology. *Jammu, Kashmir.*
1910 May 4.	R.	Sandes, Capt. J. D., M.B., I.M.S. *Government House, Calcutta.*
1916 July 5.	R.	Sarkar, Ganpati. 69, *Baliaghata Main Road, Calcutta.*
1898 Mar. 2.	N.R.	Sarkar, Jadunath. Hindu University. *Benares City.*
1909 Mar. 3.	R.	Sarvadhikari, The Hon. Mr. Deva Prasad, M.A., B.L. 2. *Old Post Office Street. Calcutta.*
1911 Jan. 4.	R.	Sarvadhikari, Dr. Suresh Prasad. 79-1, *Amherst St., Calcutta.*
1902 June 4.	R.	*Satis Chandra Vidyabhusana, Mahamahopadhyaya, M.A., Ph.D., F.A.S.B. 28/1, *Kanay Lal Dhar's Lane, Calcutta.*
1900 Dec. 5.	A.	Schwaiger, Imre George, Expert in Indian Art. *Europe.*
1915 Feb. 3.	R.	Segard, Dr. C. P. 23, *Park Mansions, Calcutta.*
1902 May 7.	R.	Sen, Jogendra Nath, *Vidyaratna,* M.A. 31, *Prasanna Kumar Tagore's Street, Calcutta.*
1914 April 1.	N.R.	Sen-Gupta, Dr. Nares Chandra. *Dacca.*
1897 Dec. 1.	R.	Seth Mesrovb J. 19, *Lindsay Street, Calcutta.*
1911 July 5.	N.R.	Sewell, Capt. Robert Beresford Seymour, M.R.C.S., L.R.C.P., I.M.S. (*c/o Indian Museum, Calcutta*).
1909 Jan. 6.	N.R.	Shirreff, Alexander Grierson, B.A., I.C.S. Secy. Govt. of U.P. *Allahabad.*
1913 Dec. 3.	A.	Shorten, Capt. James Alfred, B.A., M.B., B.Ch., I.M.S. *Europe (c/o India Office).*
1914 Mar. 4.	R.	Shrosbree, A. de Bois. *Improvement Trust, Calcutta.*
1908 Mar. 4.	R.	Shujaat Ali, Nasirul Mamalik Mirza, Khan Bahadur, Acting Consul-General for Persia 10, *Hungerford Street, Calcutta.*
1916 Aug. 2.	N.R.	Shukla, Pandit Ashwani Kumar, B.A., LL.B., Revenue Officer, Mewar State. *Udaipur.*
1902 Feb. 5.	N.R.	Shyam Lal, Lala, M.A., LL.B., Deputy Collector. *Naimadri, Agra.*
1899 May 3.	N.R.	Silberrad, Charles Arthur, B.A., B.Sc., I.C.S., *Gorakhpur, U.P.*
1913 Mar. 5.	N.R.	Simonsen, J. L., D.Sc., *Presidency College, Madras.*

Date of Election.		
1909 April 7.	N.R.	*Simpson, George Clarke, D.Sc. *Simla.*
1894 July 4.	N.R	Singh, Raja Kushal Pal, M.A. *Narki*
1912 May 1.	R.	Singh Roy, Rai Lalit Mohan, Bahadur. 4, *Creek Row, Calcutta.*
1893 Mar. 1.	N.R.	Singh, Maharaja Kumara Sirdar Bharat, I.C.S. (retired). *Shankergar, Allahabad.*
1899 Aug. 29.	N.R.	Singh, H.H. The Maharaja Sir Prabhu Narain, Bahadur, G.C.I.E., Maharaja of Benares. *Ramnagar Fort, Benares.*
1909 April 7.	N.R	Singh, Raja Prithwipal, Talukdar of Surajpur. *District Barabanki, Oudh.*
1899 Nov. 6.	L.M.	Singh, H.H. The Hon. Maharaja Sir Rameshwara, Bhahadur, K.C.I E. *Durbhanga.*
1912 Mar. 6.	R.	Singh Maharaja Ranjit. 10, *Hungerford Street, Calcutta.* [*now*,
1913 July 2.	N.R.	Singh, Rudradat, M.A., LL B., Vakil. *Luck-*
1894 Feb. 7.	N.R.	Singh, H.H. The Maharaja Vishwa Nath, Bahadur. *Chhatturpur, Bundelkhund.*
1912 Sept. 5.	N.R.	Singhi, Bahadur Singh. *Azimgunj, Murshidabad.*
1897 Jan. 6	R.	Sircar, Amrita Lal, F.C.S., L M.S. 51, *Sankaritolla Lane, Calcutta.*
1898 Aug. 3.	N.R.	Sita Ram, Lala, B A., Depy. Magistrate. *Allahabad.*
1913 July 2.	N.R.	Sivaprasad, B.A . Offg. Junior Secretary to the Board of Revenue, U.P. *Allahabad.* [*India Office*).
1911 Mar. 2.	A.	Smith, Major O A. 27th Punjabis (*c o*
1901 Dec 4.	N.R.	*Spooner, David Brainerd. *Simla.*
1904 Sept. 28.	A.	Stapleton, Henry Ernest, B.A., B Sc. *Europe* (*c/o India Office*).
1908 Dec. 2.	R.	Steen, Major Hugh Barkley, M.B., I.M.S. 6, *Harrington Street, Calcutta.*
1904 June 1.	A.	Stephen, The Hon. Mr Justice Harry Lushington. *Europe* (*c/o India Office*).
1900 Aug. 29.	N.R.	Stephenson, Lieut.-Col. John, I.M.S. *Lahore.*
1907 Dec. 4.	A.	Stevens, Lieut -Col. C. R., I.M S. *Europe* (*c/o India Office*).
1907 June 5.	A.	Stewart, Capt. Francis Hugh, I.M.S. *Europe* (*c o India Office*).
1906 Dec. 5.	A.	Stokes, Captain Claude Bayfield. *Europe* (*c/o India Office*).
1911 Feb. 1.	A.	Stonebridge, Arthur W. *Europe* (*c o Messrs. Burn & Co.*).
1915 April 7.	N.R.	Storey, C. A., Prof. of Arabic, M. A. O. College. *Aligarh.*

Date of Election.		
1916 July 5.	R.	Street, W. S. *Shaw Wallace & Co., Calcutta.*
1907 Aug. 7.	N.R.	Subramania Iyer, Valavanur, Extra Asst. Conservator of Forests. *Quilon, Travancore.*
1907 June 5.	R.	Suhrawardy, Hon. Abdullah Al-Ma'mūn, Iftikharul Millat, M.A. D.Litt., LL.D., Bar.-at-Law. 3, *Wellesley 1st Lane. Calcutta.*
1914 Mar. 4.	R.	*Sutherland. Lt.-Col. William Dunbar, I.M.S. *U.S. Club, Calcutta.*
1916 Sept. 27.	N.R.	Sutherland, Rev. W. S., D.D., Scottish Universities Mission. *Kalimpong, Darjeeling Dist.*
1907 June 5.	A.	Swinhoe, Rodway Charles John. *Europe (c/o High Court, Rangoon).*
1909 Jan 6.	R.	Tagore, Kshitindranath B.A. 6/1 *Dwarkanath Tagore Lane, Calcutta.*
1914 April 1.	R.	Tagore, Prafulla Nath. 1, *Darpanarain Tagore Street, Calcutta.*
1898 April 6.	R.	Tagore, The Hon. Maharaja Sir Prodyat Coomar, Bahadur, Kt *Pathuriaghatta, Calcutta.*
1904 July 6.	F.M.	Talbot, Walter Stanley, I.C.S. c/o Messrs. H. S. King & Co 9, *Pall Mall, London, S.W.*
1910 Aug. 3.	N.R.	Tancock, Capt. Alexander Charles. 31*st Punjabis, Nowshera, N.W.F.P.*
1893 Aug. 31	N.R.	Tate, George Passman 56, *Cantonment, Bareilly, U.P.*
1906 Dec. 5.	N.R.	Tek Chand, Dewan, B.A. M.R.A.S., I.C.S., Deputy Commissioner *Gujranwala, Punjab*
1878 June 5.	F.M.	Temple, Colonel Sir Richard Carnac, Bart., C.I.E., Indian Army. 9, *Pall Mall, London.*
1914 Aug. 5.	N.R.	Tessitori, Dr. L. P. *Bikaner, Rajputana.*
1911 Mar. 1.	F.M.	Thomas, F. W., M.A., Ph.D., Librarian, India Office. *London.*
1909 Aug. 4.	N.R.	Thompson, John Perronet, M.A., I.C.S. [*Lahore.*
1908 Nov. 4.	A.	Thornely, Major Michael Harris. I.M.S. *Europe (c/o India Office).*
1911 July 5.	A.	Thurston, Capt. Edward Owen, I.M.S., B.S., F.R.C.S. *Europe (c/o India Office).*
1904 June 1.	N.R.	*Tipper, George Howlett, M.A., F.G.S. (c/o *Geological Survey of India, Calcutta*).
1912 Nov. 6.	R	Tomkins, H. G., C.I.E., F.R.A.S *Accountant General, Bengal, Calcutta.*

Date of Election.		
1907 Feb. 6.	A.	*Travers, Morris William, D.Sc., F.R.S., F.A.S.B. (43, *Warwick Gardens, London, W.*)
1861 June 5.	L.M.	Tremlett, James Dyer, M.A., I.C.S. (retired). *Dedham, Essex, England.*
1894 Sep. 27.	R.	Vasu, Nagendra Nath. 20, *Visvakos Lane, Bagbazaar, Calcutta.*
1900 Aug. 29.	A.	Vaughan, Lieut.-Col. Joseph Charles Stoelke, I.M.S. *Europe (c/o India Office).*
1890 Feb. 5.	N.R.	*Venis, Arthur, M.A., D.Litt., C.I.E., F.A.S.B. *Benares.*
1901 Mar. 6.	F.M.	*Vogel, Jean Philippe, Litt.D., F.A.S.B. *The University, Leiden, Holland.*
1894 Sept. 27.	L M.	Vost, Lieut.-Col. William, I.M.S., Civil Surgeon. *Secunderabad.*
1902 Oct. 29.	R.	*Vredenburg, Ernest, B.L., B.Sc., A.R.S.M., A.R.C.S., F.G.S., F.A.S.B. 27, *Chowringhee Road, Calcutta.*
1907 July 3.	N.R	Walker, Harold, A.R.C.S., F.G.S., A.M. Inst. M. (c/o Geological Survey of India *Calcutta*).
1901 June 5.	N.R.	Walsh, The Hon. Mr. Ernest Herbert Cooper, C.S.I., I.C.S., Commissioner, Chota Nagpur Divn. *Ranchi.*
1911 Feb. 1.	N.R.	Waters, Dr. Harry George, F.R.I.P.H. *Allahabad.*
1905 Dec. 6.	A.	Watson, Edwin Roy, M.A., B.Sc. *Europe (c/o Dacca College, Dacca).*
1910 Sept. 7.	R.	Watts. H. P., B.A. (Cantab). *La Martinere College, Calcutta.*
1909 Dec. 1.	N.R.	Webster, J. E., I.C.S. *Sylhet, Assam.*
1913 April 2.	R.	White, Bernard Alfred. *Chartered Bank Buildings, Calcutta.*
1915 Jany. 6.	N.R.	Whitehouse, Richard H., Prof. of Biology, *Govt. College, Lahore.*
1906 Sept. 19.	N.R.	Whitehead, Richard Bertram, I.C.S. *Rupar, Umbala, Punjab.*
1915 May 5.	N.R.	Williams, L. F. Rushbrook, B.A., B.Litt., Prof. of Modern Indian History, Allahabad University. *Allahabad.*
1909 April 7.	A.	Woodhouse, E. J., B.A. (*c/o Agricultural College, Sehour*).
1912 Mar. 6.	R.	Woodroffe, The Hon. Justice Sir John George, Kt. 4, *Camac Street, Calcutta.*
1906 Mar. 7.	N.R.	Woolner, Alfred Cooper, M.A., Punjab University. *Lahore.*

Date of Election.		
1908 April 1.	R.	Wordsworth, Hon. William Christopher. *Writers' Buildings, Calcutta.*
1894 Aug. 30.	A.	Wright, Henry Nelson, B.A., I.C.S. *Europe (c/o India Office).*
1911 Aug. 2.	N.R.	Young, Gerald Mackworth, B.A., I.C.S. *Lahore.*
1906 June 6.	N.R.	Young, Mansel Charles Gambier. *Asansol.*
1910 April 6.	N.R.	Young, Capt. Thomas Charles McCombie, M.B., I.M.S. *Shillong Assam.*

SPECIAL HONORARY CENTENARY MEMBERS.

Date of Election.	
1884 Jan. 15.	Revd. Professor A. H. Sayce, Professor of Assyriology, Queen's College. *Oxford, England.*
1884 Jan. 15.	Monsieur Émile Senart. 18, *Rue François Ier, Paris, France.*

HONORARY FELLOWS.

Date of Election.	
1879 June 4.	Dr. Jules Janssen. *Observataire d'Astronomie Physique de Paris, France.*
1895 June 5.	Lord Rayleigh, M.A., D.C.L., D.Sc., LL.D., Ph.D., F.R.A.S., F.R.S. *Ferling Place, Witham, Essex, England.*
1895 June 5.	Charles H. Tawney, Esq., M.A., C.I.E. *c/o India Office, London.*
1896 Feb. 5.	Professor Charles Rockwell Lanman. 9, *Farrar Street, Cambridge, Massachusetts, U.S. America.*
1899 Feb. 1.	Dr. Augustus Frederick Rudolf Hœrnle, Ph.D., C.I.E. 8, *Northmoor Road, Oxford, England*
1899 Dec. 6.	Professor Edwin Ray Lankester, M.A., LL.D., F.R.S. *British Museum (Nat. Hist.), Cromwell Road, London, S W.*
1899 Dec. 6.	Professor Edward Burnett Tylor, D.C.L., LL.D., F.R.S., Keeper, University Museum. *Oxford, England.*
1901 Mar. 6.	Professor John Wesley Judd, C.B., LL.D., F.R.S., F.G.S., Late Prof. of the Royal College of Science. 30, *Cumberland Road, Kew, England.*

Date of Election	
1904 Mar. 2.	Professor Sir Ramkrishna Gopal Bhandarkar, K.C.I.E. *Poona.*
1904 Mar. 2.	Sir Charles Lyall, M.A., K.C.S.I., C.I.E., LL.D. 82, *Cornwall Gardens, London, S.W.*
1904 Mar. 2.	Sir George Abraham Grierson, K.C.I.E., Ph.D., D.Litt., C.I.E., I.C.S. (retired). *Rothfarnham, Camberley, Surrey, England.*
1906 Mar. 7.	The Right Hon'ble Baron Curzon of Kedleston, M.A., D.C.L., F.R.S. 1, *Carlton House Terrace, London, S.W.*
1908 July 1.	Lieut.-Col Henry Haversham Godwin-Austen, F.R.S., F.Z.S., F.R.G.S., *Nora Godalming, Surrey, England.*
1911 Sept. 6.	Lieut.-Col. Alfred William Alcock, C.I.E., M.B., LL.D., C.M.Z.S., F.R.S., I.M.S. (retd.). *Heathlands Erith Road, Belvedere, Kent, England.*
1911 Sept. 6.	Prof. Edward George Browne, M.A., M.B., M.R.C.S., L.R.C.P., M.R.A.S. *Pembroke College, Cambridge.*
1911 Sept. 6.	Mahamahopadhyaya Kamakhyanath Tarkavagisa. 111-4, *Shambazar Street, Calcutta.*
1915 Aug. 4.	Prof. Paul Vinogradoff, F.B.A. D.C.L. 19, *Linton Road, Oxford, England.*
1915 Aug. 4.	Monsieur Jean Geston Darboux. 3, *Rue Nazarine, Paris, France.*
1915 Aug. 4.	Sir Patrick Manson, G.C.M.G., M.D., LL.D., F.R.C.P. 21, *Queen Anne Street, Cavendish Square, London, W.*
1915 Aug. 4.	Sir Joseph John Thomson, Kt. O.M., M.A., Sc.D., D.Sc. LL.D., Ph.D. *Trinity College. Cambridge, England.*
1916 Dec. 6.	Dr. G. A. Boulenger, F.R.S., LL.D., British Museum (Nat. Hist.). *Cromwell Road, London, S.W.*
1917 May 2.	Herbert A. Giles, Esq., LL.D., University of Cambridge. *Cambridge*

FELLOWS.

Date of Election.	
1910 Feb. 2.	N. Annandale, Esq., D.Sc., C.M.Z.S., F.L.S.
1910 Feb. 2	The Hon'ble Justice Sir Asutosh Mukhopadhyaya, Kt., C.S.I., M.A., D.L., D.Sc., F.R.A.S., F.R.S.E.
1910 Feb. 2.	I. H. Burkill, Esq., M.A., F.L.S.

Date of Election.	
1910 Feb. 2.	Mahamahopadhyaya Haraprasad Shastri, C.I.E., M.A.
1910 Feb. 2.	Sir Thomas Holland, K.C.I.E., D.Sc., A.R.C.S., F.G.S., F.R.S.
1910 Feb. 2.	T. H. D. LaTouche, Esq., B.A., F.G.S.
1910 Feb. 2.	Rai Bahadur Monmohan Chakravarti, M.A., B.L.
1910 Feb. 2.	Lieut.-Colonel D. C. Phillott, Ph.D., Indian Army.
1910 Feb. 2.	Dr. Prafulla Chandra Ray, D.Sc.
1910 Feb. 2.	Lieut.-Col. Sir Leonard Rogers, Kt., C.I.E., M.D., B.S., F.R.C.P., F.R.C.S., F.R.S., I.M.S.
1910 Feb. 2.	E. D. Ross, Esq., C.I.E., Ph.D.
1910 Feb. 2.	Mahamahopadhyaya Satis Chandra Vidyabhusana, M.A., Ph.D., M.R.A.S.
1910 Feb. 2.	M. W. Travers, Esq., D.Sc., F.R.S.
1910 Feb. 2.	A. Venis, Esq., M.A., D.Litt., C.I.E. [I.C.S.
1911 Feb. 1.	The Hon. Sir E. A. Gait, K.C.S.I., C.S.I. C.I.E.,
1911 Feb. 1.	H. H. Hayden, Esq., C.I.E., D.Sc., B.A., B.E., B.A.I., F.G.S., F.R.S.
1912 Feb. 7.	H. Beveridge, Esq., I.C.S. (retired).
1912 Feb. 7.	J. C. Bose, Esq., C.S.I., C.I.E., M.A., D.Sc.
1912 Feb. 7.	P. J. Bruhl, Esq., Ph.D., F.C.S.
1912 Feb. 7.	Capt. S. R. Christophers, I.M.S.
1912 Feb. 7.	Charles Stewart Middlemiss, Esq., B.A., F.G.S.
1913 Feb. 5.	Major A. T. Gage, I.M.S. [F.G.S.
1913 Feb. 5.	E. Vredenburg, Esq., B.L., B.Sc., A.R.S.M., A.R.C.S.,
1913 Feb. 5	J. Ph. Vogel, Esq., Ph.D., Litt.D.
1913 Feb. 5.	S. W. Kemp, Esq., B.A.
1915 Feb. 3.	Major E. D. W. Greig, C.I.E., M.B., I.M.S.
1915 Feb. 3.	G. H. Tipper, Esq., M.A., F.G.S.
1915 Feb. 3.	D. B. Spooner, Esq., Ph.D.
1915 Feb. 3.	H. H. Haines, Esq., F.C.H., F.L.S.
1916 Feb. 2.	Lieut.-Col. C. Donovan, M.D., I.M.S.
1916 Feb. 2.	The Hon. Mr. R. Burn, C.I.E., I.C.S.
1916 Feb. 2.	L. L. Fermor, Esq., A.R.S.M., D.Sc., F.G.S.
1917 Feb. 7.	G. C. Simpson, Esq., D.Sc., F.R.S.
1917 Feb. 7.	Lt.-Col. W. D. Sutherland, M.D., I.M.S.
1917 Feb. 7.	F. H. Gravely, Esq., D.Sc.

ASSOCIATE MEMBERS.

Date of Election.	
1875 Dec. 1.	Revd. J. D. Bate. 15, *St. John's Church Road, Folkestone, Kent, England.*
1885 Dec. 2.	Dr. A. Führer, Prof. of Sanskrit, 5, *Dorenbachstrasse Bininngen, Basil, Switzerland.*

Date of Election.	
1899 Nov. 1.	Revd. E. Francotte, S.J. 30, *Park Street, Calcutta.*
1902 June 4.	Revd. A. H. Francke *Europe.*
1908 July 1.	Rai Sahib Dinesh Chandra Sen, B.A. 19, *Visvakos Lane, Calcutta.*
1910 Sept. 7.	Shamsul Ulama Maulavi Ahmad Abdul Aziz. *Azeez Bag, City-Hyderabad, Deccan.*
1910 Sept. 7.	L. K. Anantha Krishna Iyer, Esq. *Trichur.*
1910 Dec. 7.	Rev. H. Hosten, S.J. 30, *Park Street, Calcutta.*
1913 Feb. 5.	Ekendranath Ghosh Esq., M.D. *Medical College, Calcutta*
1914 Apl. 1.	Bada Kaji Marichiman Singha. *Bir Library, Nepal.*
1915 Mar. 3.	E. Brunetti, Esq. 27, *Chowringhee Road, Calcutta.*
1915 Dec. 1.	Pandit Jainacharya Vijayadharma Surisvaraji, *Yasovijaya Granthamal Office, Benares City.*

LIST OF MEMBERS WHO HAVE BEEN ABSENT FROM INDIA THREE YEARS AND UPWARDS.*

* *Rule* 40.—After the lapse of three years from the date of a member leaving India, if no intimation of his wishes shall in the interval have been received by the Society, his name shall be removed from the List of Members.

The following members will be removed from the next Member List of the Society under the operation of the above Rule :—

T. H. Bishop, Esq., D.P.H.
Sir Robert Warrand Carlyle, K.C.S.I., C.I.E.
Stephen Demetriadi, Esq.
Lieut. G. Harris, I.A.
Capt. Frederick Christian Hirst, I.A.
Capt. James Alfred Shorten, I.M.S.
Major O. A. Smith, I.A.
Harry Lushington Stephen, Esq., I.C.S.
Capt. Francis Hugh Stewart, I.M.S.
Arthur W. Stonebridge, Esq.
Major Michael Harris Thornely, I.M.S.
Capt. Edward Owen Thurston, I M.S.

LOSS OF MEMBERS DURING 1917.

BY RETIREMENT.

Ordinary Members.

Nawab Ahmed Hosein Khan.
Frank David Ascoli, Esq., I.C.S.
Dewan Bahadur Hira Lall Bose.
Everard Digby, Esq.
Dr. Harinath Ghose, M.D.
Dr. Birendra Nath Ghosh.
Major Richard Ernest Lloyd, I.M.S.
K. Ramunni Menon, Esq.
Charles William Peake, Esq., M A.
William Heath Phelps, Esq.
Charles Stanley Price, Esq.
Dr. Satyendra Nath Roy.
T. Southwell, Esq, A.R.C.S., F.Z.S.
P. T. Srinivasa Iyenger, Esq.
Dr. Philip Lechmen Stallard.
Gilbert Thomas Walker, Esq., C.S I., D Sc.

Associate Member.

Rai Balkrishna Atmaram Gupte, Bahadur.

BY DEATH.

Ordinary Members.

James Hector Barnes, Esq.
John Gerald Gardner Gardner-Brown, Esq., M.A.
William Cardiff Hossack, Esq., M.D., D.P.H.
James Henry Little, Esq.
Charles Russell. Esq., M.A.
Framjee Jamasjee Thanawala, Esq.

Honorary Centenary Member.

Dr. Ernst Haeckel.

Honorary Fellow.

Professor Hendrick Kern.

Associate Member.

Rai Sarat Chandra Das, Bahadur, C.I.E.

RULE 38.

Abdul Faiz Muhammad Abdul Ali, Esq.
Maulavi Aminullah.
Babu Devendra Kumar Banerji.

Manan Dube, Esq.
Babu Hemendra Prasad Ghosh
The Hon. A. K. Ghuznavi.
C M. Hutchinson, Esq.
Sydney Montague Jacob, Esq
Ranganathaswami, Esq.
Babu Lachminarayan Singh.

RULE 40.

H. O. Balton, Esq.
Lt.-Col. William George Grey, I.A
W. Jessop, Esq
A. Martin Leake, Esq., F.R.C.S.
Eugen Ludwig, Esq.
Surgeon-Capt. Frederick MacCabe
Lieut. Frank Hailstone Malyon, I A
Paul Gregory Melitus, Esq., C.I.E.
Robert Nathan, Esq., I.C.S
George L. Stadler Esq

RULE 41.

Ordinary Members.

Herman G. Finck, Esq , M.D.
Count Graf. Karl L. Luxburg,
Joseph Henry Charles Schulten, Esq., Ph.D
Dr. O. Strauss.

Honorary Fellows.

Dr A. Engler.
Prof. Ignaz Goldziher, Ph.D., D.Litt.
Prof. Theodor Noeldeke.
Dr. H. Oldenberg.

ELLIOTT GOLD MEDAL AND CASH.

RECIPIENTS

1893	Chandra Kanta Basu.
1895	Yati Bhusana Bhaduri, M.A.
1896	Jnan Saran Chakravarti, M.A.
1897	Sarasi Lal Sarkar, M.A.
1901	Sarasi Lal Sarkar, M.A.
1904	Sarasi Lal Sarkar, M.A. Surendra Nath Maitra, M.A.
1907	Akshoyakumar Mazumder
1911	Jitendra Nath Rakshit. Jatindra Mohan Datta.

1913	Rasik Lal Datta.
	Saradakanta Ganguly.
	Nagendra Chandra Nag.
	Nilratan Dhar.

BARCLAY MEMORIAL MEDAL.

RECIPIENTS.

1901	E. Ernest Green, Esq.
1903	Major Ronald Ross F.R.C.S., C.B., C.I.E., F.R.S., I.M.S. (retired).
1905	Lieut.-Colonel D. D. Cunningham, F.R.S., C.I.E., I.M.S. (retired).
1907	Lieut.-Colonel Alfred William Alcock, M.B., LL.D., C.I.E., F.R.S.
1909	Lieut.-Colonel David Prain, M.A., M.B., LL.D., F.R.S., I.M.S. (retired).
1911	Dr. Karl Dinner.
1913	Major William Glen Liston, M.D., C.I.E., I.M.S.
1915	J. S. Gamble, Esq., C.I.E., M.A., F.R.S.
1917	Lieut.-Colonel Henry Haversham Godwin-Austen, F.R.S., F.Z.S., F.R.G.S.

[APPENDIX.]

ABSTRACT STATEMENT

OF

RECEIPTS AND DISBURSEMENTS

OF THE

ASIATIC SOCIETY OF BENGAL

FOR

THE YEAR 1917.

STATEMENT

1917. *Asiatic Society*

Dr.

	Rs.	As.	P.	Rs	As	P
To Establishment.						
Salaries	6,589	11	0			
Commission . ..	310	3	3			
Pension . .	180	0	0			
Grain Allowance .	97	9	0			
				7,177	7	3
To Contingencies.						
Stationery... .. .	101	1	2			
Light and Fans ...	273	14	0			
Postage ..	452	12	3			
Freight .	787	14	3			
Auditing	150	0	0			
Taxes	1,495	0	0			
Insurance .	343	12	0			
Petty Repairs .	0	12	0			
Servant's Clothing	122	12	0			
Miscellaneous	488	10	0			
				4,216	7	8
To Library and Collections.						
Books	533	14	10			
Binding	671	14	0			
Furniture .	45	0	0			
				1,250	12	10
To Publication.						
Journal and Proceedings, and Memoirs ...	6,265	11	7			
To printing charges of Circulars, etc. ...	342	8	0			
				6,608	3	7
Repairs...				2,505	0	0
To Personal Account (written-off and miscellaneous)				809	11	2
To Extraordinary Expenditure.						
Royal Society's Scientific Catalogue				402	11	3
Balance				1,88,429	10	6
Total Rs. ...				2,11,400	0	3

No. 1

of Bengal. *1917.*

Cr.

	Rs.	As.	P.	Rs.	As.	P.
By Balance from last Report				1,87,803	15	6
By Cash Receipts.						
Interest on Investments	7,997	15	0			
Rent of Room	600	0	0			
Publications sold for cash	308	8	0			
Sale of Receipt Book	6	0	0			
Advance recovered	1,000	0	0			
Travelling Charges refunded . ..	166	10	9			
Miscellaneous	196	4	3			
				10,275	6	0
By Extraordinary Receipt.						
Subscription to Royal Society's Scientific Catalogue				270	0	0
By Personal Account.						
Members' subscription	9,490	0	0			
Subscriptions to Journal and Proceedings, and Memoirs	1,848	0	0			
Sales on credit	1,089	1	0			
Admission fees	576	0	0			
Miscellaneous	47	9	9			
				13,050	10	9
Total Rs. ...				2,11,400	0	8

E. & O. E.

R. D. Mehta,
Hon. Treasurer.

Calcutta, 31*st December*, 1917.

STATEMENT

1917. *Oriental Publication Fund, No. 1, in*

From a monthly grant made by the Government of Bengal for the publica-
(Rs. 500), and for the publication of Sanskrit

Dr.

To Cash Expenditure.

	Rs.	As.	P.	Rs.	As.	P
Salaries	2,032	1	9			
Commission	4	13	3			
Editing charges	637	8	0			
Stationery	16	0	2			
Binding	24	0	0			
Postage	185	14	6			
Contingencies	35	7	6			
Grain Allowance	20	13	6			
Light and Fans	24	3	0			
Printing charges	2,053	3	2			
Servants' Clothing	18	10	0			
				5,047	10	10
To Personal Account (written-off and miscellaneous) ...				25	0	0
Balance				17,081	13	0
Total Rs.				22,154	7	10

STATEMENT

1917. *Oriental Publication Fund, No. 2, in*

From a monthly grant made up to Mar. 31, 1917, by the Government of
Historical Interest

Dr.

	Rs.	As.	P.
Balance	9,109	3	0
Total Rs. ...	9,109	3	0

No. 2.

Acct. with the Asiatic Soc. of Bengal. 1917.

tion of Oriental Works and Works on Instruction in Eastern Languages Works hitherto unpublished (Rs. 250).

Cr

	Rs	As.	P	Rs	As.	P
By Balance from last Report				9,615	7	1
By Cash Receipts						
Government Allowance	9,000	0	0			
Publications sold for cash ...	895	10	3			
Advances recovered ...	107	6	9			
				10,003	1	0
By Personal Account.						
Sales on credit				2,535	15	9
Total Rs				22,154	7	10

E & O. E

R D. Mehta,

Calcutta, 31*st December*, 1917 *Hon. Treasurer.*

No. 3.

Acct. with the Asiatic Soc. of Bengal. 1917.

Bengal of Rs. 250 for the publication of Arabic and Persian Works of (without remuneration).

Cr.

	Rs	As.	P.
By Balance from last Report	8,109	3	0
By Cash Receipt.			
Government Allowance . .	1,000	0	0
Total Rs.	9,109	3	0

E. & O. E.

R. D Mehta.

Calcutta, 31*st December*. 1917. *Hon. Treasurer.*

STATEMENT

1917. Oriental Publication Fund, No. 3, in

From special non-recurring grants made by the Government of Bengal,
English translation of the Akbar-

Dr.

To Cash Expenditure

		Rs.	As.	P
Printing charges	... ...	390	13	0
Balance	..	784	10	6
Total Rs		1,175	7	6

STATEMENT

1917. Sanskrit Manuscript Fund in Acct.

From annual grants of Rs. 3,200, made by the Government of Bengal and
krit Manuscripts acquired by the Society for Government; and Rs. 2,400

Dr.

To Cash Expenditure.

	Rs	As	P	Rs	As	P.
Salary of Officer-in-Charge ...	2,400	0	0			
Other salaries ...	1,606	4	6			
Contingencies	13	2	0			
Stationery	16	0	2			
Grain Allowance	12	8	3			
Postage	13	15	6			
Light and Fans	24	3	0			
Insurance	125	0	0			
Bonus	210	0	0			
Printing	917	8	0			
				5,338	9	5
Balance ..				6,915	10	9
Total Rs.				12,254	4	2

No. 4.

Acct. with the Asiatic Soc. of Bengal. 1917.

in 1908 of Rs 8,000 and in 1914 of Rs. 2,000, for the publication of an
nama (without remuneration)

Cr.

		Rs	As	P
By Balance from last Report	..	1 175	7	6
Total Rs		1 175	7	6

E & O. E

R D Mehta

Hon. Treasurer

Calcutta, 31*st December*, 1917

No 5

with the Asiatic Society of Bengal. 1917.

at present sanctioned to Mar. 31, 1918 only, for the cataloguing of Sans
from the same Government for the salary of the Officer-in-Charge.

Cr.

	Rs	As	P.	Rs.	As	P.
By Balance from last Report				4 649	4	2
By Cash Receipts						
Transferred from Bureau of Information	2,000	0	0			
Government Allowance for Cataloguing ...	2,400	0	0			
" " " Sans. MSS. Preservation	3,200	0	0			
Publications sold for cash	5	0	0			
				7,605	0	0
Total Rs. ...				12,254	4	2

E & O. E

R. D. Mehta

Hon Treasurer

Calcutta 31*st December*, 1917

STATEMENT

1917. Anthropological Fund in Account

From an annual grant of Rs. 2,000, made by the Government of

Dr

To Cash Expenditure

	Rs	As.	P	Rs.	As	P
Printing charges				415	5	6
Balance				4,069	2	0
Total Rs				4 484	7	6

STATEMENT

1917. Bureau of Information in Account

From an annual grant of Rs 1,200 made by the Govern

Dr.

To Cash Expenditure

	Rs	As	P	Rs	As	P
Transferred to Sanskrit MSS Fund ...	2 000	0	0			
Salary	1,200	0	0			
				3 200	0	0
Balance				1 000	0	0
Total Rs				4,200	0	0

STATEMENT

1917. Bardic Fund in Account with

From an annual grant of Rs 6 000, made by the Govern

Dr.

To Cash Expenditure

	Rs	As	P	Rs	As	P
Salary	2,000	0	0			
Travelling charges	166	10	9			
				2 166	10	9
Total Rs				2 166	10	9

No. 6.

with the Asiatic Society of Bengal *1917*

Bengal, for the publication and purchase of Anthropological works

Cr.

	Rs	As	P	Rs	As	P
By Balance from last Report				2484	7	6
By Cash Receipt						
Government Allowance				2 000	0	0
Total Rs				4 484	7	6

E. & O. E.

Calcutta 31*st December*, 1917 — R D **Mehta**, *Hon Treasurer*

No. 7

with the Asiatic Society of Bengal. *1917*

ment of Bengal for the salary of the Officer-in Charge

Cr.

	Rs	As	P
By Balance from last Report ..	3,000	0	0
By Cash Receipt			
Government Allowance	1 200	0	0
Total Rs	4,200	0	0

E. & O. E.

Calcutta, 31*st December* 1917 — R D. **Mehta**, *Hon Treasurer*

No. 8

the Asiatic Society of Bengal. *1917.*

ment of India to the Society up to Mar 31, 1917

Cr.

	Rs	As	P.	Rs.	As	P
By Balance from last Report				2,166	10	9
Total Rs ..				2,166	10	9

E. & O. E.

Calcutta, 31*st December*, 1917 — R. D **Mehta**, *Hon. Treasurer*

STATEMENT

1917. Arabic and Persian MSS. Fund in

From an annual grant of Rs 5,000, made by the Government of India
binding of Arabic and Persian Manuscripts acquired by the Society
preparation of notices of Arabic and Persian manu-

Dr.

TO CASH EXPENDITURE

	Rs.	As.	P.	Rs.	As.	P.
Salaries	3,721	14	9			
Binding	31	0	0			
Contingencies	18	1	3			
Stationery ...	19	15	9			
Furniture	197	2	0			
Grain Allowance	18	0	0			
Travelling Allowance	28	0	0			
Insurance	31	4	0			
Postage ...	1	9	6			
Purchase of MSS	40	0	0			
				4,106	15	3
Balance				7,070	4	7
TOTAL Rs				11,177	3	10

STATEMENT

1917. Barclay Memorial Fund in Account

From a sum of Rs. 500 odd given in 1896 by the Surgeon
couragement of Medical

Dr.

TO CASH EXPENDITURE.

	Rs.	As.	P.	Rs.	As.	P.
Cost of Medal	7	4	0			
Postage	1	1	0			
To Balance—				8	5	0
G.P. Notes (face value)	500	0	0			
Accumulated interest	60	3	1			
				560	3	1
TOTAL Rs.				568	8	1

No. 9.

Acct. with the Asiatic Soc. of Bengal. 1917.

and at present sanctioned for another year only, for the cataloguing and
for Government, for the purchase of further manuscripts, and for the
scripts found in various libraries in India.

Cr.

	Rs.	As.	P
By Balance from last Report	6,177	3	10
By Cash Receipt.			
Government Allowance	5,000	0	0
Total Rs. ...	11,177	3	10

E. & O. E.

Calcutta, 31st December, 1917 R. D. Mehta, *Hon. Treasurer.*

No. 10.

with the Asiatic Society of Bengal. 1917.

General, I.M.S., for the foundation of a medal for the en-
and Biological Science

Cr.

	Rs.	As.	P	Rs.	As.	P
By Balance from last Report						
G.P. Notes (face value) . .	500	0	0			
Accumulated interest	53	1	7			
				553	1	7
By Cash Receipt.						
Interest				15	6	6
Total Rs.				568	8	1

E. & O. E.

Calcutta, 31st December, 1917 R. D. Mehta, *Hon. Treasurer.*

STATEMENT

1917. Indian Science Congress in Account

From the subscriptions of

Dr.

To Cash Expenditure

	Rs.	As.	P.	Rs.	As.	P.
Printing charge .	561	11	3			
Postage ...	75	4	0			
Stationery ...	34	13	0			
Contingencies .	78	12	6			
Bonus .	47	0	0			
Advance .. .	100	0	0			
				897	8	9
Balance ...				1,946	6	2
Total Rs ...				2,843	14	11

STATEMENT

1917. Building

From a sum of Rs. 40,000 given by the Government of

Dr.

To Cash Expenditure.

	Rs	As.	P.
Commission for realising interest	1	11	0
Balance	49,776	0	0
Total Rs. ...	49,777	11	0

STATEMENT

1917. Servants' Pension

Founded in 1876 as the Piddington Pension Fund,

Dr.

To Cash Expenditure

	Rs.	As.	P
Commission for realising interest	0	4	0
Balance ...	1,535	7	10
Total Rs. ..	1,535	11	10

No. 11.

with the Asiatic Society of Bengal. 1917.

members of the Congress.

Cr.

	Rs.	As.	P.
By Balance from last Report	780	7	3
By Cash Receipts.			
Subscriptions, etc.	2,063	7	8
Total Rs. ...	2,843	14	11

E. & O. E.

R. D. Mehta,
Hon. Treasurer.

Calcutta, 31*st December*, 1917.

No. 12.

Fund. 1917.

India towards the rebuilding of the Society's Rooms.

Cr.

	Rs.	As.	P.
By Balance from last Report	48,379	6	0
By Cash Receipt.			
Interest	1,398	5	0
Total Rs. ...	49,777	11	0

E. & O. E.

R. D. Mehta,
Hon. Treasurer.

Calcutta, 31*st December*, 1917.

No. 13.

Fund. 1917.

with Rs. 500 odd from the Piddington Fund.

Cr.

	Rs.	As.	P.
By Balance from last Report	1,486	11	10
By Cash Receipt.			
Interest	49	0	0
Total Rs. .	1,535	11	10

E. & O. E.

R. D. Mehta,
Hon. Treasurer.

Calcutta, 31*st December*, 1917

STATEMENT

1917. *Cat. Sci. Srl. Publ. Calcutta, in*

From a sum of Rs 2,500 given by the Trustees of the Indian Museum

Dr.

	Rs.	As.	P.
Balance	2,500	0	0
TOTAL RS. ...	2,500	0	0

STATEMENT

1917. *Fixed Deposit,*

Dr.

To CASH EXPENDITURE.

	Rs.	As.	P.
To Fixed Deposit for 6 months from 1st June, 1917, @ 3½% per annum	20,000	0	0
TOTAL .	20,000	0	0

STATEMENT

1917. *Invest-*

Dr.

	Value. Rs.	As.	P.	Cost. Rs.	As.	P.
To Balance from last Report	2,59,300	0	0	2,56,163	8	10
TOTAL RS	2,59,300	0	0	2,56,163	8	10

FUNDS	PERMANENT RESERVE						TEMPORARY RESERVE						Total		
	Value.			Cost			Value								
	Rs.	A.	P.	Rs.	A.	P.	Rs	A	P.	Rs.	A.	P.	Rs.	A.	P.
Asiatic Society .	1,67,600	0	0	1,66,285	9	8	40,500	0	0	38,700	14	2	2,04,986	7	10
Building Fund	49,800	0	0	49,777	11	0	.						49,777	11	0
Servants' Pension Fund	1,400	0	0	1,399	6	0					..	.	1,399	6	0
TOTAL RS. ..	2,18,800	0	0	2,17,462	10	8	40,500	0	0	38,700	14	2	2,56,163	8	10

No. 14.

Acct with the Asiatic Soc. of Bengal 1917.

through the Government of India for the publication of catalogue

Cr.

By Cash Receipt

	Rs.	As	P
Government Allowance	2,500	0	0
Total Rs	2,500	0	0

E & O E

Calcutta, 31*st December*, 1917. R. D. Mehta, *Hon. Treasurer*

No. 15.

Bank of Bengal. 1917.

Cr.

	Rs	As	P.
By Cash Receipt	20,000	0	0
Total Rs	20,000	0	0

E & O E.

Calcutta, 31*st December*, 1917. R D. Mehta, *Hon. Treasurer*

No. 16.

ment. 1917.

Cr

	Value.			Cost.		
	Rs.	As.	P.	Rs	As	P.
By Balance	2 59,300	0	0	2,56,163	8	10
Total Rs.	2,59,300	0	0	2,56,163	8	10

E & O E.

Calcutta, 31*st December*, 1917. R D. Mehta, *Hon Treasurer*.

STATEMENT

1917. *Personal*

Dr.

	Rs.	As.	P	Rs.	As.	P
To Balance from last Report ..	...			4,393	7	2
Advances for postage, etc.	453	8	3			
To Asiatic Society	13,050	10	9			
„ O P Fund No. 1	2,535	15	9			
				16,040	2	9
TOTAL Rs. ...				20,433	9	11

STATEMENT

1917. *Treasury*

Dr.

TO CASH EXPENDITURE.

	Rs	As.	P	Rs.	As.	P.
To Treasury Bill Rs. 15,000 for 12 months from 1st December, 1917, @ 95°/o ..	14 250	0	0			
To Treasury Bill Rs 5,000 for 6 months from 1st December, 1917, @ 97-9-0°/o ..	4 878	2	0			
				19,128	2	0
TOTAL Rs. ...				19,128	2	0

No. 17.

Account. *1917.*

Cr.

							Rs.	As.	P.
By Cash Receipts							15,806	10	10
„ Asiatic Society							809	11	2
„ O. P. Fund No. 1							25	0	0
By Balance.	Due to the Society.			Due by the Society.					
	Rs	As.	P.	Rs.	As.	P.			
Members	3,641	7	11	82	1	6			
Subscribers	..		..	48	0	0			
Ujagir Chaube, Bill Collector	.	.	..	100	0	0			
Miscellaneous	414	1	6	33	4	0			
	4,055	9	5	263	5	6	3,792	3	11
TOTAL Rs.							20,433	9	11

E. & O. E.

R. D. MEHTA,
Hon. Treasurer.

Calcutta, 31*st December*, 1917.

No. 18.

Bills. *1917.*

Cr.

	Rs.	As.	P.
By Balance	19,128	2	0
TOTAL Rs.	19,128	2	0

E. & O. E.

R. D. MEHTA,
Hon. Treasurer.

Calcutta, 31*st December*, 1917.

Liabilities up to 31st December, 1917.

FUNDS.

	Rs.	As.	P.
Asiatic Society	6,768	12	9
O P. Fund, No. 1	6,012	11	0
Do. No. 2	2,062	0	0
TOTAL Rs.	14,843	7	9

Copy of Certified Statement of Securities in Custody of the Bank of Bengal on account of Asiatic Society of Bengal, December 31, 1917 :—

3½	per cent. Loan of 1842-43	16,700
3½	„ „ „ „ 1854-55	1,53,700
3½	1865	44,300*
3½	1879	8,000
3½	1900-1	26,000
*3	1896-97	500
4	Terminable Loan of 1915-16	10,100
	TOTAL Rs.	2,59,300

[* Cashier's security deposit.—*Ed.*]

Copy of Certified Statement of Securities in Custody of the Alliance Bank of Simla, Ltd., on account of Barclay Memorial Fund, January 18, 1917 :—

3½	per cent. Loan of 1854-55	300
3½	„ „ „ „ 1854-55	100
3½	„ „ „ „ 1900-01	100
	TOTAL Rs	500

THE FIFTH INDIAN SCIENCE CONGRESS, LAHORE, JANUARY 1918.

The Fifth Indian Science Congress was held in Lahore on January 9th, 10th, 11th, and 12th, 1918, under the presidency of Dr. Gilbert T. Walker, C.S.I., M.A., Sc.D., F.R.S. The meeting was attended by about 300 members and over 100 papers were communicated, abstracts of which are given below.

The Patron of the Congress, H.H Sir Michael O'Dwyer, G.C.I.E., K.C.S.I., was present at the opening meeting and welcomed the visitors in a short speech.

Presidential Address.

By GILBERT T. WALKER, *C S.I.*, *M.A.*, *Sc.D.*, *F.R.S.*

YOUR HONOUR; LADIES AND GENTLEMEN,

The visit of the Science Congress to Lahore at this its Fifth Meeting is to my mind appropriate, not merely in view of the importance of the engineering, agricultural, educational, and sanitary questions that arise in the Punjab, but also because of its close associations with Sir Denzil Ibbetson. His reputation for strength, ability, and devotion to duty was such as almost to overshadow the fact that he was, I believe, the only member of the Imperial Executive Council during the past twenty years with a scientific training; and that his knowledge of mathematics, physics, and chemistry was more than that of an amateur I can personally testify. Let us not forget the splendid demonstration that his career has given to India of the value of an education in modern subjects.

Since we separated a year ago at Bangalore we have lost two of our most prominent members, both of whom were to have presided over their Sections at this meeting. Dr. E. G. Hill was educated at Leeds and Magdalen College, Oxford, joining the Educational Service in 1895 as Professor of Chemistry at the Muir College, Allahabad. Shortly afterwards he became Dean of the Science Faculty, and in 1913 he was appointed Principal of his College. He contributed a number of original papers on a variety of chemical subjects, was interested in meteorology, and from an early date saw the need of giving his pupils such a training as would fit them to take up the commercial applications of chemistry. He died on 28th June at the age of forty-five.

Professor J. H. Barnes was educated at the Birmingham University, and in 1906 was made Agricultural Chemist to the Punjab, being appointed Principal of the Lyallpur College two years later. A few months before his death from enteric on the 2nd June, he was selected as chief chemist at the Pusa Agricultural Institute. He carried through a considerable amount of research in agriculture, some being of great importance in connection with the growth of sugarcane and of wheat. Lately he worked out methods of producing excellent crops of wheat on land that had previously been barren from alkali, and of preventing the damage done to stored wheat by insect pests. Both Dr. Hill and Professor Barnes did their work in spite of periodic ill-health, and both ought to have had many years of activity before them. I would express the respectful sympathy of this Congress to their relations.

In whatever direction we turn we see profound changes of attitude brought about by the present world-struggle, and we ought to remember that upheavals of thought, like physical convulsions, have their dangers. Just as a prudent man will, after an earthquake, examine his house to see whether it is safe, so it is essential that we should make sure of our ideas as modified by the war. In India as in England many men have realized that a neglect in education of the study of Nature involves terrible penalties to nations as to individuals in their struggle for existence, and there is a widespread resolve that the teaching of science and of its technical applications shall occupy an important place in our colleges. But this resolve is not in itself sufficient. Unless we make certain that the new education is effective, our action will be like that of a certain Persian Monarch who, having to adjudicate upon two poems, had one of them read to him and at once, without further investigation, awarded the prize to the other! I propose therefore to devote the first half of my remarks to some features in our science teaching that appear to me of importance.

Now it has, I think, to be admitted that in England the teaching of mathematics, physics, and chemistry, though less bad than the teaching of classics, has been far less efficient than it might have been. It has included tables of facts instead of ideas, and has been abstract in its methods where it should have been concrete. In England it is now being realized that if you teach Latin as if it were a language the time spent in learning to read it may be reduced to a half of what it was, and it is equally true, though not so well known, that the time devoted to arithmetic, algebra, and geometry could have been divided by two by the elimination of what is obsolete or maintained solely for examination purposes. If a boy is taught for some months to draw geometrical figures with ruler, set square, protractor, and compasses, he will acquire concrete ideas about circles and triangles in addition to training his fingers and learning the meaning of accuracy. Numbers of facts about a circle will be obvious to him which he will never be able to deduce without help from the statement that it is a plane figure bounded by a line called the circumference and such that the straight lines from all points on the circumference to a certain point within it are equal. The ordinary argument for Euclid was that its severe logic taught the art of reasoning. But to the real mathematician the lengthy argument seems largely verbiage, concealing the essentially geometrical ideas; while to the severe logician the reasoning is in quite important respects incomplete and inaccurate. As one of my Cambridge logical friends remarked :—" Euclid would be a much better book if it did not make so hysterical an appeal to the emotions."

I have dealt at some length with geometry, although the teaching of arithmetic and algebra is as bad, because I want to emphasize the fact that it is better if we can make a boy see mathematical relations by intuition, rather than merely give his mental assent to proofs in which he can see no flaw.

I remember, at a British Association Meeting, Fitzgerald, one of the finest men of science that Ireland has produced, was challenged for his reasons for a belief that he strongly held, and he silenced his opponents by replying that he 'felt it in his bones.' It is this kind of instinct that distinguishes the most capable men wherever we find them. Another example is that of S. Ramanujam, whose mathematical work I saw something of about five years ago while he was still a clerk drawing about Rs. 50 a month in the Port Engineer's Office at Madras. He had never been to a university, but he had discovered hundreds of theorems in several very advanced branches of pure mathematics To me the most surprising feature of his work was the small attention that he seemed to pay to formal proofs, and it was this as much as anything else that suggested his genius. As you know, Madras gave him a special scholarship to send him to Cambridge, and there he has shown himself a mathematician of the first order who will earn an international reputation.

I do not assert that any students who may be among my audience will convince their teachers of their transcendent ability by contemptuous refusal to learn book-work. But I differ entirely from the view, which is widely held, that for a professional man insight matters little provided there is textbook knowledge. What is wanted in life is ability to apply principles to the actual cases that arise; and the man who understands is of enormously greater value than the living compendium of information. When Pasteur as a chemist was asked to find a remedy for the pest that was ruining the French silk industry, he knew absolutely nothing of silkworms; yet he solved the problem, and it was general understanding of Nature's methods that brought him success. For mere information a sensible man goes to books of reference; he does not waste energy in burdening his memory with it.

But if it is a pity when the teaching of mathematics is made lifeless, it is fatal when that of physics or chemistry is carried on without constant appeal to experiment. A boy who has played with a force pump has no difficulty in grasping what we mean when we say 'head of water,' though the idea may be hard if based on the abstract definition of a 'perfect incompressible liquid': and such corresponding electric terms as 'electromotive force' and 'capacity' are just as easy to a boy who has played to an equal extent with electric apparatus. But how many are nearly as familiar with electric appliances as they are with mechanical ? And why should we wonder then that electromagnetic theory is usually found difficult ?

Now all that I have said applies more to Indians than to Europeans for two reasons. First, the wonderful memories of most students of this country must be a continual temptation to them to remember a discussion rather than to absorb its ideas, when memorising is easier than grasping ; and secondly, early training in handling tools and apparatus is not nearly as general here as in England. As an example of what I mean I may be allowed to refer to my old school days at St. Paul's, where, in addition to splendid laboratories for physics, chemistry, and biology, there were prizes to encourage mechanical ingenuity and skill, and as evidence of the standard reached I remember one boy was some way down the list although he had made a gyroscope that would spin for twenty minutes. I have no data as to the number of us that had collections of electric apparatus or small chemical laboratories or fitting shops at home ; but it was appreciable, and to those who had them they made an enormous difference They made the laws of Nature real, concrete, and vivid, instead of mere abstract relations between quantities known only by definitions.

Training of the hands is necessary also for the acquirement of manipulative skill, without which many discoveries would never have been made. As one example I will quote the Cape Astronomer Gill, who developed methods of measuring angles in the sky to one-hundredth of a second, the angle subtended by a quarter-anna piece at a distance of 330 miles, half the distance from here to Karachi. As another example we may take Ramsay's determination of the atomic weight of the rare gas niton. The largest volume of it that he could obtain was 1/200 of a cubic millimeter not a hundredth of a pin's head in bulk ; yet he utilized a balance so inconceivably delicate as to weigh this minute amount correctly.

Having considered briefly the subjects of instruction let us glance at the methods of testing our students. I think that one of the most disappointing facts learned in the twelve years that I spent as a lecturer in mathematical physics at Trinity College, Cambridge, was the amount of time and energy that had to be spent both in examining and in revising the methods of examining. A genius like Stokes or Kelvin works out a theory which after a time finds its way into text-books and becomes a suitable subject for examination questions. It is placed in the syllabus and then its degeneration begins. The questions become crystallized in type, and the theory may remain in the syllabus long after it has ceased to have a living interest: it may even be that its basis has been destroyed by more recent discoveries. In Cambridge, as in India, vested interests are powerful, and it was only the zeal of its teachers and the healthy opinion of a resident Senate, which included some sixty Fellows of the Royal Society, that made it possible to effect from time to time the drastic reforms that were necessary.

Such degeneration as this is unfortunately not confined to science. The founders of schools of painting or of music produce ideas which in their followers sink into mere mannerisms; and in the history of religion or morals the collapse is even more conspicuous. To quote examples of this in the big world-religions is as unnecessary as it would be depressing; so I will draw merely from those survivals of primitive religion or superstition which form a perpetual reminder to the educated classes of all countries of their brotherhood with the savage. Some of you may realize that in Europe when a soldier's charger follows his master's coffin in his funeral procession this is a piece of ritual surviving from times long ago when the horse was killed in order that his master might have him to ride in the other world; but how many of us understand the ritual that binds us in certain circumstances to throw salt over the left shoulder, or to throw a shoe after a newly married couple? The old ritual that gets rid of devils by driving them into animals still survives in England. Some twenty years ago in a village outside Cambridge there was a case of small-pox, and the peasants, good Christians as they were, had little idea, when they drove a number of sheep through the infected cottage, that they were getting rid of the devil of small-pox by giving it the sheep to enter into. In the same way the shepherds of our youth, I venture to think, have little idea, when they drive their flocks through their routine text-books, that there is grave risk of setting free the evil spirits that are the curse of our examination system; and that these may seize upon the innocent pupils and destroy their chance of a really successful life.

The only method of putting the science teaching of our universities on to a satisfactory footing is to appoint sufficient numbers of first-rate teachers, men who are keen researchers and can impart their enthusiasm to their classes: and they cannot carry out investigations if their routine work leaves them no leisure. Further, unless they are to be professors of pure mathematics, they must have a laboratory training. For men who teach physics on its qualitative or experimental side this condition is universally accepted, but if it is to be taught on the quantitative side this is just as necessary. To attempt to shuffle out of the obligation by re-labelling the subject as applied mathematics is dishonest: and it has not even the merit of being good policy. For it gives you a man whose natural field for research work is barred to him: he is not familiar enough with current experimental work to apply mathematical methods to it.

It would be idle to contend that the initial cost of efficiency will not be large; but the importance of the issue is enormous, and there can be no doubt that the expenditure would ultimately be remunerative. Let us consider wheat-growing as an example. Before the war an acre of wheat in England yielded about twenty-three maunds, but in India about eight maunds. In view of recent research work, however, it would appear not impossible to improve the Indian yield by two maunds an acre, after which it would still not be half what is obtained in England. But the value of each additional maund an acre is fifteen crores of rupees, so that the extra two maunds would sell annually for a sum three times the total present expenditure on public instruction in British India, including universities and schools.

The improvement of sugar is another possible object. India has about 2½ million acres of which each on the average produces about 1 1 ton of gur, equivalent to 0·4 of a ton of refined sugar In Java the output is about four times as great; but in the Sandwich Islands they obtain from 6 to 12 tons of sugar an acre—something like twenty times as much as in this country. Considering the varieties of soil and climate in India, it would appear that a considerable improvement could be made here during the next twenty years. In a similar way the revenues from the forests of India which at present average only 1⅓ annas an acre are worth fifty times this amount in some parts of the country and are obviously capable of large growth. Whether we look to the older industries or to the newer commercial ones, we find indications of great rewards for research work.

It may occur to those of you who are interested in the general problems of administration, that while the experimental methods which have revolutionized science have much to say in connection with agriculture or manufacturing processes, they have little to do with the problems that arise when studying the general welfare of a province or the success of a large business. Now the essence of the experimental method is that instead of basing our explanations of phenomena on our faulty intuitions we base them on and test them by definite observations. But this method is capable of very wide application. If we were interested in such a question as the effect of temperature on plague, we should find it extremely difficult and costly to institute special direct experiments on the subject; but Nature has been making experiments for us for centuries, and there is no reason why we should ignore her work because we have not organized and paid for it. If we have fairly reliable data for thirty or forty years regarding our question, it is obvious that there should be material enough to settle it, and the only point at issue is how this is to be done.

Now quite simple considerations lead us to the idea of the correlation coefficient between two quantities as the extent to which the variations of each are determined by those of the other If we have a number of bags of rupees made of various light materials, the variations of the weights of the bags will be almost entirely governed by the numbers of rupees inside, and the correlation between the weight of a bag and the number of rupees inside will be almost exactly + 1. Similarly the percentage of members ot our Congress who are ladies added to the percentage who are men must make 100: hence the correlation coefficient between these two percentages must be exactly − 1. On the other hand, if the variations of one quantity have very little dependence on those of another, such as the cost of a book and its literary merit, the correlation coefficient will be small.

I propose now to give you a general idea of the method of statistics by looking at some of its applications, and first of all will put before you the problem that led me to work at the method. You will see on the screen the average winds of July, showing that our rain-bearing monsoon winds come from the South Indian Ocean and must therefore be affected by conditions over a large part of the earth's surface. The upper pair of curves now before you[1] illustrates the formula worked out in 1908 for forecasting the whole monsoon rainfall of India. The formula, being based mainly on the data from 1876 to 1908, agrees fairly well with the actual rainfall during that period; but the indications given by it for the nine years 1909 to 1917 afford us a perfectly satisfactory test of its value. The formula, as you will see, is in excess or defect with the actual, seven times out of nine.

Turning to the cold weather the forecast turns mainly on whether the season is severe or mild in December: for there are fairly long odds that it keeps through January and February the same character as it had in December. The line marked 'calculated' indicates for successive years the conditions in December in the extreme north of India, Persia, and Baluchistan as given by the rainfall; while the 'actual' gives the subsequent rainfall and snowfall of the winter as actually reported in North-West India. You will see that in most years the December conditions afford a correct indication of the ensuing months.

---

[1] *See* Fig. I.

Let us now consider some agricultural applications. The dependence of crops on rainfall is in many countries so obvious that anybody with the least claim to a mathematical equipment ought to be able to work out for himself a formula for the crop in terms of the total rainfall; and the earliest case that I know of the application of statistical methods is the determination in 1874 by Governor Rawson of the sugar crop of Barbados from the rainfall. The curves before you[1] show the rainfall, the actual crop, and the crop as calculated by Rawson's formula. We may take as representing the modern method of determining what affects a crop that employed by Hooker in 1907. We have on the screen[2] diagrams showing for wheat, oats, potatoes and hay in the east of England the effect of rain, of accumulated temperature above 42°. and of accumulated temperature below 42°. The curves show the correlation coefficients at intervals of four weeks for about 18 months before the crop is harvested, and from these we may read off the conditions that bring success For wheat they want a warm and dry first summer, autumn, and winter, with cold and wet in the final spring: a cold winter is bad. For oats it is vital to have heavy rainfall and deficient warmth in the spring and summer. For potatoes cold and rain in the first summer are good. not bad as for other crops. For hay nothing matters until the final spring, when wet and cool weather is essential. The correlation coefficient of the hay outturn with these two factors jointly is 0·8, which means that an extremely good forecast is possible.

Last year I made a preliminary examination into the wheat, cotton, and jute crops of India, but found the extreme shortness of the series of reliable data available to me a big handicap. The outcome, which is not very trustworthy, is before you,[3] and appears to show that important results may be expected from a more complete examination. If you look at the correlations for the Punjab rabi wheat crop you will see that it seems to be greatly affected by cloud. temperature, and humidity in March, as well as by rain in December and January. Taking the rainfall of the two earlier months we can derive a forecast of the probable crop, and the result of this is shown as the upper diagram on the screen.[4] By confining himself to single types of crop and a single district or assessment circle Mr. S. M. Jacob has got some striking results, and the middle and lowest diagrams indicate how well statistical formulae will fit the data for the past thirty years. The middle one shows how the area of well-irrigated wheat in the Dona Charhda assessment circle is related to the previous rainfall. Naturally if a peasant realizes that there has been rain enough to sow his wheat on unirrigated land he sows it there. and the area sown on well-irrigated land is diminished. The lowest curve gives the actual area compared with the area as deduced from the rainfall.

---

[1] *See* Fig. II.

[2] *See* Fig. III.

[3] *See* Fig. IV.

[4] *See* Fig. V.

We may now turn to America where the Agricultural Department have been most energetic and successful in work of this kind. As an example I have taken the Georgia cotton crop which is largely dependent on temperature in May and June. The diagram[1] shows how a forecast may be based on this. When the process of ginning is actually going on they are still anxious to know what the total crop will be : and the lower diagram illustrates how this may be obtained from the amount of cotton actually gained between the 1st September and the 14th November and the number of fair days in that interval.

So far our methods have been quite easy to interpret, and there is little room for controversy as long as purely mathematical conditions are satisfied. It is when we come to economical or sanitary questions that difficulties arise, especially if the data are not reliable or do not cover a long series of years. For we may find that events A tend to be associated with events B; but this does not prove that A causes B or that B causes A : for both of them may be due to some third series of events C I will illustrate this by showing you two curves The topmost on the screen[2] gives the proportion of those in England who when married cannot write and put a mark on the register instead of a signature. The second curve gives the amount of unemployment in England : actually it indicates the total expenditure by trades unions on their unemployed members. At first sight it would therefore appear that there is a very intimate and reliable relation between illiteracy and unemployment, the more ignorant the people the less being the unemployment. But we cannot conclude that A causes B until we have satisfied ourselves that no third factor C dominates the situation. One factor which seems most likely to influence the proportion of illiterate married people is the number of marriages, for the rate at which educated people marry will presumably not vary very greatly from year to year : and the factor which may be expected to have most influence on unemployment is the amount of trade. I am accordingly giving you as the fourth curve on the screen the fluctuations in the marriage rate, and as the third the fluctuations in the sum of exports and imports per head. It is now quite clear that the prosperity of the country is the dominating factor. When trade is good unemployment is small : at the same time weddings are numerous especially among the working classes, and hence the proportion of those who can only put a mark in the marriage register will be large. In text-books of statistics there are definite types of relationship which are called spurious. but the necessary and sufficient way of avoiding all these pitfalls and securing a right result is to consider all the factors which can produce an appreciable influence.

---

[1] *See* F'g. VI.

[2] *See* Fig. VII

Among the most interesting and important Indian problems to which statistical methods can be applied are those of the health and prosperity of its races, and I will sketch an attempt that I made recently to throw light on conditions in Bengal. The data of births, deaths, and diseases there are recorded by chowkidars and are officially admitted to be decidedly inaccurate: at the same time it is easy to see that, if two series of quantities are related and we make random errors in recording them, the two inaccurate series so derived will in general be related almost as clearly as the original series. Hence there is hope that these vital statistics, though inaccurate, will yield results which are true qualitatively though perhaps not quantitatively.

A student of Bengal data finds himself brought up at the outset by what seems an insurmountable barrier to progress. The registration by the village chowkidars seems so bad that over Bengal each of them reports the same number of deaths irrespective of what has really happened. This, at least at first sight,[1] appears to be the only interpretation that can be put on the close relation between the death-rate and the number of chowkidars per 10,000 of the population. But even if the work is badly done why should this relation hold? Our suspicions are thereby roused, and if in obedience to the principle just laid down we think what other factors may be involved we soon hit on the explanation The obvious factor to examine is that of population: a big death-rate means that the ratio of the population, say, ten or twenty years ago, to that of to-day is high. If the number of chowkidars per 10,000 is also high in these cases, it means that for the areas in which the population of say, twenty or thirty years ago was high, the number of chowkidar posts also was high. In other words, when the numbers of the chowkidar posts were last revised they were made roughly proportional to the population of the time; and this, I am told, is what happened. The lowest curve on the screen gives the ratio of the population of 1881 to that of 1911. It could not be expected that this would agree perfectly with either curve, but I think it supports the interpretation.

As it is better for these purposes to have a fairly uniform area, I have taken for consideration that of South-West Bengal, *i.e.* the Burdwan and Presidency Divisions. I will not trouble you with the details of the processes employed, but will put on the screen[1] the curves showing the factors which seem to have most influence on the fever rate of any year. They are—

---

[1] *See* Fig. VIII.

(1) the population at the beginning of the year,
(2) the cost of rice in the previous year,
(3) the area under cultivation in the actual year,
(4) the rainfall in the actual year.

The table of relations between these is :

	Fever	Population	Cost of rice	Cultivated area	Rainfall
Fever	+ 1·00	+ 0·55	− 0·35	− 0·40	− 0·20
Population	+ 0·55	+ 1·00	− 0·65	0·00	+ 0·10 ?
Cost of rice	− 0·35	− 0·65	+ 1·00	+ 0·15 ?	+ 0·10 ?
Cultivated area	− 0·40	0·00	+ 0·15 ?	+ 1·00	+ 0·40
Rainfall	− 0·20	+ 0·10 ?	+ 0·10 ?	+ 0·40	+ 1·00

Of these the probable error due to pure chance is about 0·13, so I have only given the figures to the nearest 0·05, and those less than 0·2 are certainly doubtful. From these we can find by simple algebra the following 'regression' equation between the departures from their average values of these quantities.

(fever) = 0·65 (population) + 0·15 (cost of rice) − 0·35 (cultivated area) − 0·15 (rainfall) :
here by writing any quantity, such as (fever), within brackets we mean that we take the departure of the fever rate from the average and divide it by the mean departure of fever rate. Let us first look at the largest and therefore most reliable figures in the table. First, the − 0·65 suggests that a rise in the price of food in any year has a marked effect in diminishing the population at the end of that year : as we shall see later only a part of this is due to the usual struggle for existence. The + 0·55 shows that an increase of population at the beginning of a year tends strongly to be followed by an increase of the fever rate during that year : this is a rather striking result, and we shall examine it shortly. The − 0·40 shows that an increase of the area under cultivation means a decrease in the quantity of fever : this is presumably because the processes of cultivating the land leave fewer pools long stagnant for mosquitoes to

---

[1] *See* Fig. IX.

breed in. The + 0·40 presumably means that when rainfall in any year is scanty the peasant does not cultivate as much land as when there is plenty of rain for his crops. Let us now look with some care at the − 0·35 which informs us of a decrease in fever next year due to an increase in the cost of food this year. At first sight this result is surprising, for we should expect that less rice to eat this year would lower vitality and so increase fever next year, not decrease it. But the explanation is easy and important. The − 0·35 tells us of the actual effect of the cost of rice on fever rate, and so includes indirect as well as direct effects We have just seen that it has a big effect in decreasing the population, and that a decrease of population produces decrease of fever. This large indirect decrease would be enough to swamp a small direct increase; further, the decrease may be emphasized by the diminution in fever due to the slight increase in cultivation (of amount + 0·15 ?) caused by higher prices for rice. The regression equation shows us in exact terms that this general reasoning is correct. It gives us the departure in fever produced by departures in the other variables separately, and when the indirect effects of the cost of rice are in this way included in their proper places, the direct effect of an increase in the cost of rice is a small increase in the fever rate.

I have discussed these relations at some length because I wish to make it clear that though the ordinary correlation coefficient is very often treated as if it gave the direct effect of one factor on another, it frequently does nothing of the kind: and it always gives the total effect, direct and indirect. We cannot get the direct effect except by forming the regression equation of the type that we have just considered: and we may get misleading results unless that equation contains all the factors which produce appreciable effects. It will be remembered that there was a coefficient of − 0 65 between the cost of rice in any year and the population at the end of it: this relationship which is shown on the screen[1] seems at first sight so close as to suggest that the population must be in dire poverty. But if this conclusion were justified we should equally infer from the close relationship in England between the number married and the trade activity that the young people there were as anxious to get wedded as a starving man is for his food, a state of things which does not fit with a declining birth-rate. As a matter of fact the high price in any year has a relationship of − 0·35 with the increase of population in that year, but − 0·65 with that in the previous year: these relations are shown on the screen. Thus, if we can trust our data, the association of high prices in any year with low population at the end of that year is mainly brought about in the previous year, and the high prices are chiefly a result, not the cause.

---

[1] *See* Fig. X.

The remaining close association, that whereby an increase of population produces an increase of fever, is now put before you.[1] It is so directly opposed to widely accepted medical ideas that for some months I did not treat it seriously. But on my informing Major McKendrick of Kasauli of it he urged me not to reject it lightly, and drew my attention to some analyses of his which would suggest an explanation. I have therefore examined the corresponding relationship for all the ten provinces of India for which sufficient data are available, and have only found a single negative coefficient. The average value is + 0·5. For those of you who are interested in sanitary matters I may briefly explain that the spread of malaria among men depends on the meeting of healthy men with infected mosquitoes, and the spread among mosquitoes on the encounters between infected men and healthy mosquitoes; hence the relations are symmetrical from the mathematical if not the æsthetic standpoint, and an increase in the number of men has essentially the same bad effect as an increase in the number of mosquitoes.

The conditions in the drier regions of India are so different from those of Bengal that it would clearly be dangerous to argue from one to the other; and this year's malaria has drawn attention to the work of Major Christopher's seven years ago. He then published data for malaria in the Punjab as affected by prices and rainfall, noting that malaria went up with excess of rain or a rise of cost of wheat in the same year, and with a defect of rain in the previous year. His work was most important though he did not separate the direct from the indirect effects, and his numerical results and mine differ somewhat.

Taking his data without modification I have worked out the table which is put on the screen

Correlation coefficients.

	Fever	Rainfall same year	Rainfall previous year	Prices same year
Fever mortality ..	+ 1·00	+ 0·55	– 0·30	+ 0·45
Rainfall, same year ..	+ 0·55	+ 1·00	– 0·05	+ 0·10
Rainfall, previous year ..	– 0·30	– 0·05	+ 1·00	– 0·40
Price of wheat, same year	+ 0·45	+ 0·10	– 0·40	+ 1·00

---

[1] *See* Fig. XI.

Here the probable errors vary from 0·07 to 0·1 and I find

(fever) = 0·5 (rain of same year) – 0·15 (rain of previous year) + 0 35 (prices).

So the direct effect of rain in the previous year appears practically negligible, and its effect is brought about through a rise of prices.

I have deliberately given you several examples in which a superficial treatment by statistical methods leads to an entirely wrong conclusion: and it is owing to such possibilities that the remark is so glibly made by the general public that by statistics you can prove anything and that the method is not practical. But it appears to me obvious that we have every right to be misled if we trust a man's application of statistics to a problem say, in economics, if he is not familiar both with statistical methods and with the principles of economics. If you build a big bridge you call in a man who understands the calculation of stresses and strains as well as the methods of handling steel: and only when you have done that have you a right to expect success. Further, although he makes calculations you don't dismiss him for being unpractical, because everybody knows that mechanical problems have been solved by mathematical processes for a century or more. But by your self-restraint you do not forfeit the right, which long custom has given to all of us, to call any method unpractical either if it is not purely rule of thumb, or if it is in the slightest degree difficult to understand, or, most important of all, if it is new. As Huxley remarked, the practical man is the man who practises the errors of his forefathers.

I hope that statistical methods may before long be recognized as essential for efficiency for the following reasons. First, a table of data covering, say, fifty years gives any intelligent man the same advantage as if he had carefully watched the conditions for fifty years and had a perfect memory: secondly, employing a draughtsman to plot these data will suggest relationships in a manner which would otherwise require profound study of the figures: and thirdly, employing a clerk to work out the correlation coefficients and regression equation will give him without effort reliable information about their relationships which will distinguish direct from indirect effects, and could be got in no other way.

In conclusion I would urge on those of you who have any control over the collection of statistics to exercise all the care within your power in order to secure accuracy, and so by laying up invaluable materials for their use to deserve the gratitude of posterity.

Fig. I.

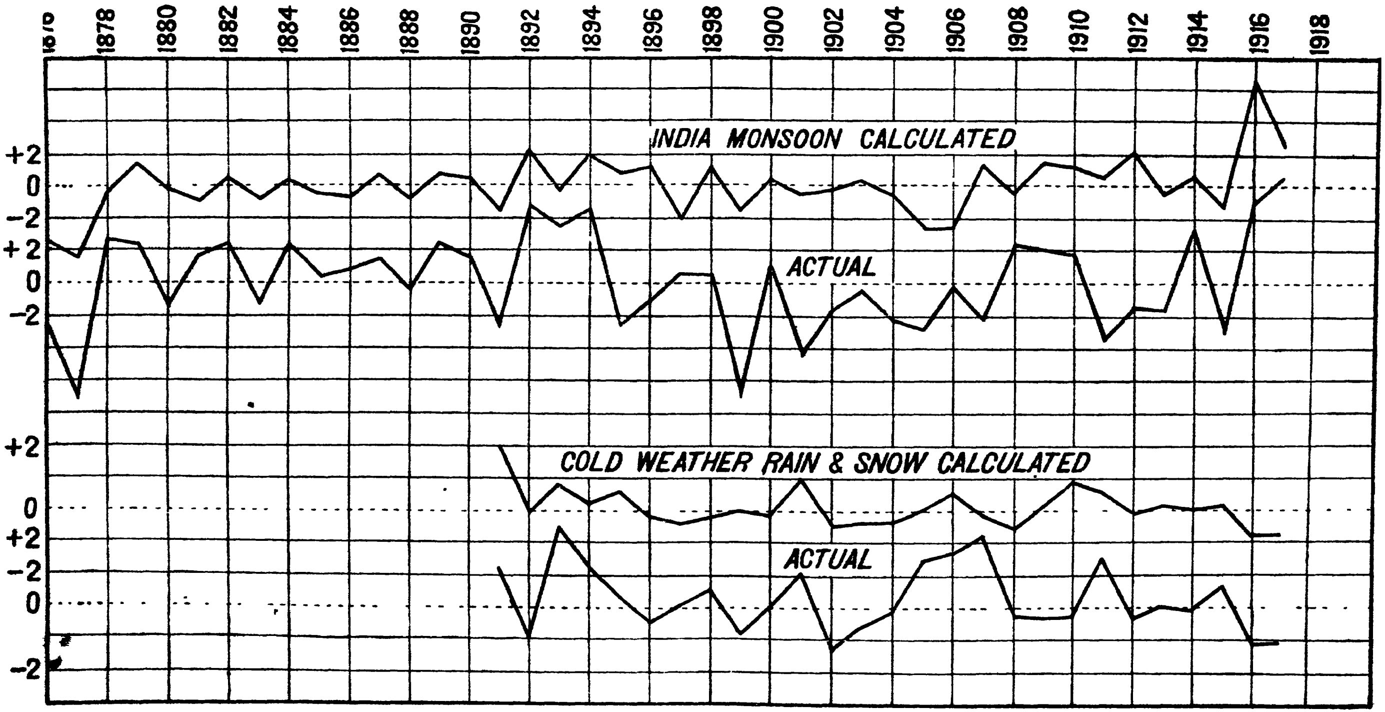

1878
1880
1882
1884
1886
1888
1890
1892
1894
1896
1898
1900
1902
1904
1906
1908
1910
1912
1914
1916
1918
INDIA MONSOON CALCULATED
ACTUAL
COLD WEATHER RAIN & SNOW CALCULATED
ACTUAL
+2
0
-2
+2
0
-2
+2
0
+2
-2
0
-2

Fig. II.

BARBADOS SUGAR

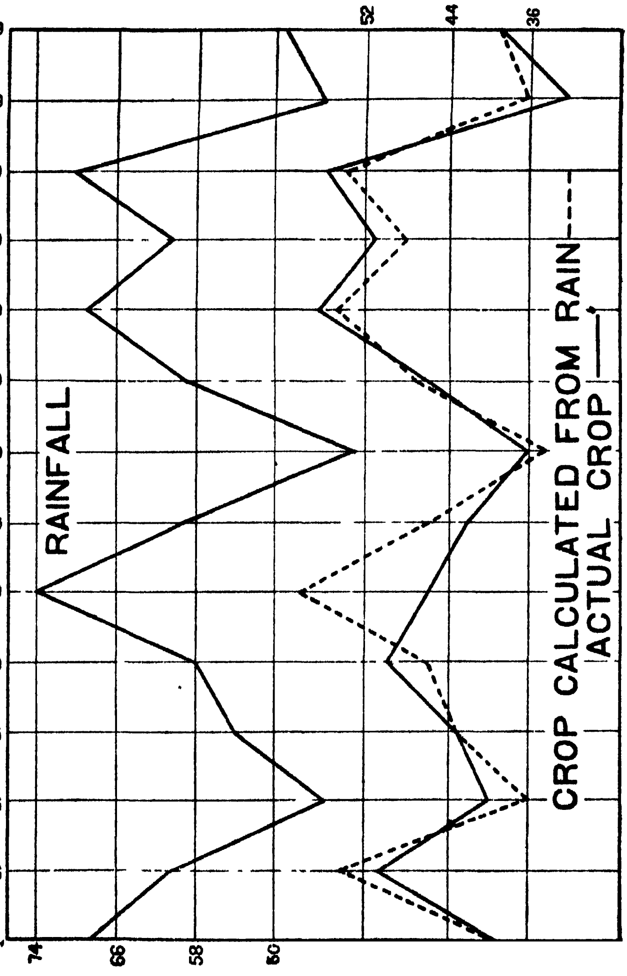


Fig. III.

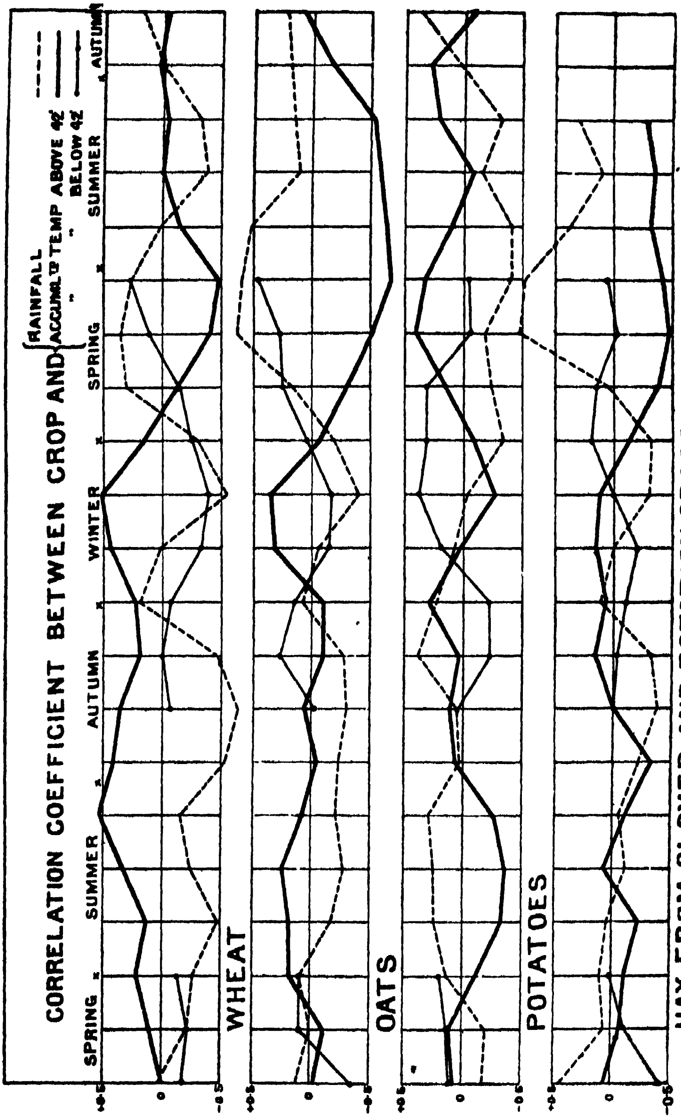
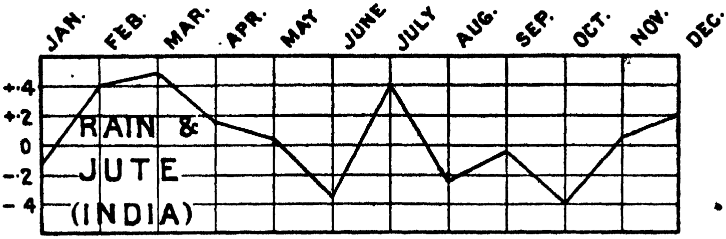
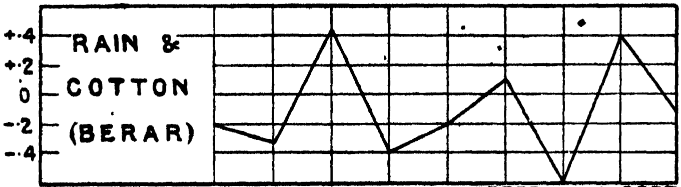

CORRELATION COEFFICIENT BETWEEN CROP AND
RAINFALL
ACCUMLD TEMP ABOVE 42°
" " BELOW 42°
SPRING
SUMMER
AUTUMN
WINTER
SPRING
SUMMER
AUTUMN
WHEAT
OATS
POTATOES
HAY FROM CLOVER AND ROTATION GRASS
+0.5
0
-0.5

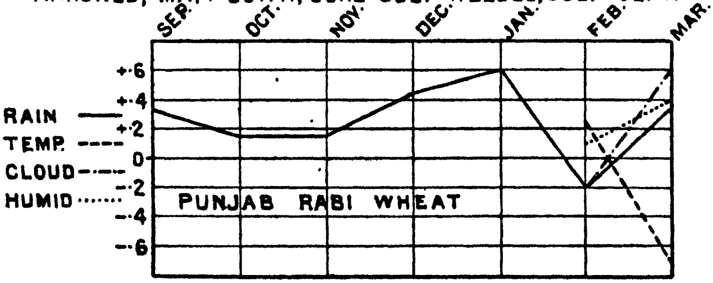
Fig. IV.



MANURED, MARCH: SOWN, APRIL-MAY: WEEDED, JUNE-SEPT: HARVESTED, JAN - FEB.



MANURED, MAY: SOWN, JUNE-JULY: WEEDED, JULY-SEPT.



SOWN, OCT-NOV: HARVESTED, MARCH – APRIL

FIG. V.

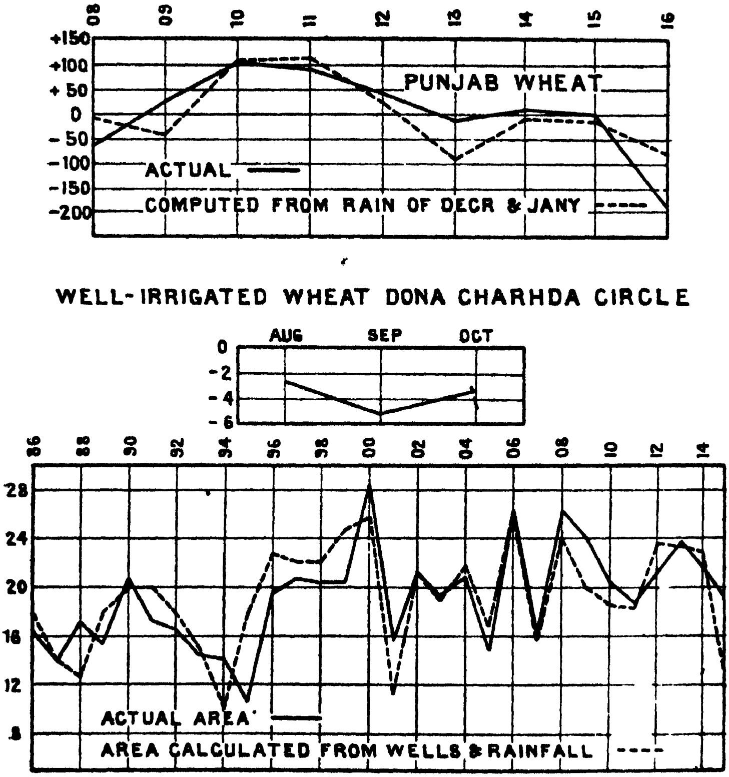
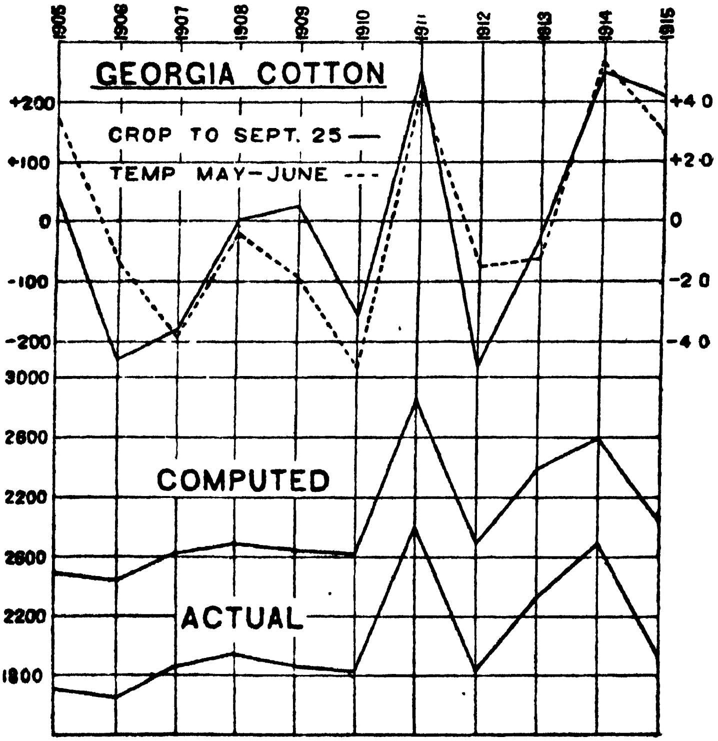

08
09
10
11
12
13
14
15
16
+150
+100
+ 50
0
- 50
-100
-150
-200
PUNJAB WHEAT
ACTUAL
COMPUTED FROM RAIN OF DECR & JANY
WELL-IRRIGATED WHEAT DONA CHARHDA CIRCLE
AUG
SEP
OCT
0
-2
-4
-6
86
88
90
92
94
96
98
00
02
04
06
08
10
12
14
28
24
20
16
12
8
ACTUAL AREA
AREA CALCULATED FROM WELLS & RAINFALL

FIG. VI.


1905
1906
1907
1908
1909
1910
1911
1912
1913
1914
1915
GEORGIA COTTON
CROP TO SEPT. 25 ——
TEMP MAY—JUNE - - -
+200
+100
0
-100
-200
3000
2600
2200
2600
2200
1800
+4 0
+2 0
0
-2 0
-4 0
COMPUTED
ACTUAL

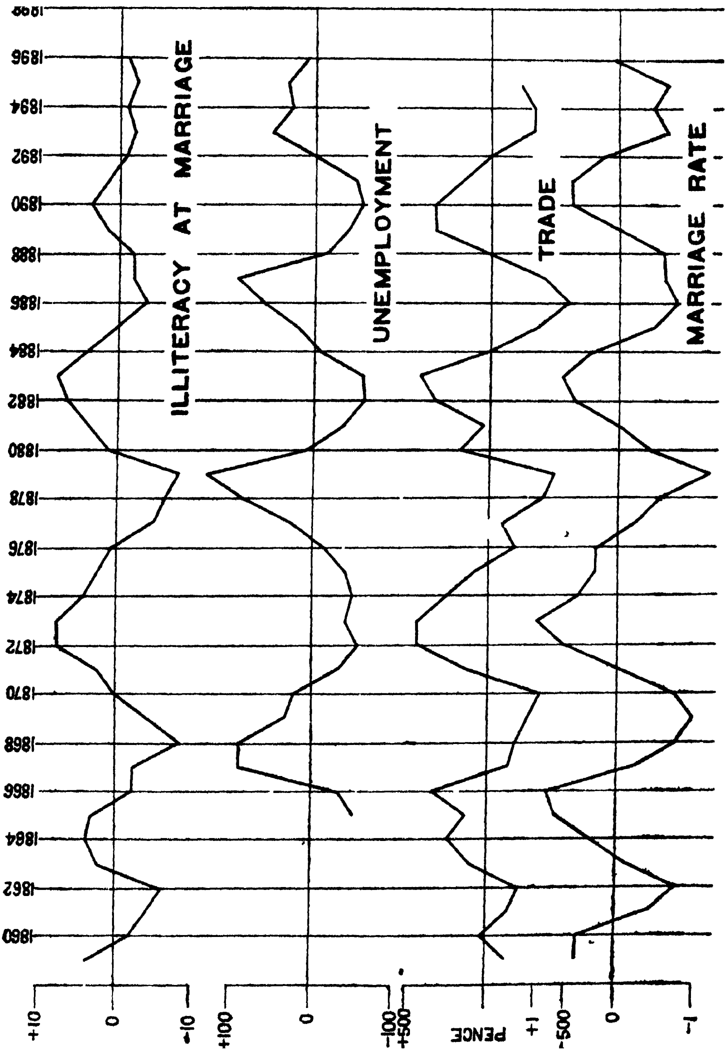

ILLITERACY AT MARRIAGE
UNEMPLOYMENT
TRADE
MARRIAGE RATE
1860
1862
1864
1866
1868
1870
1872
1874
1876
1878
1880
1882
1884
1886
1888
1890
1892
1894
1896
1898
+10
0
-10
+100
0
-100
+500
PENCE
+1
-500
0
-1

Fig. VII.

FIG. VIII.

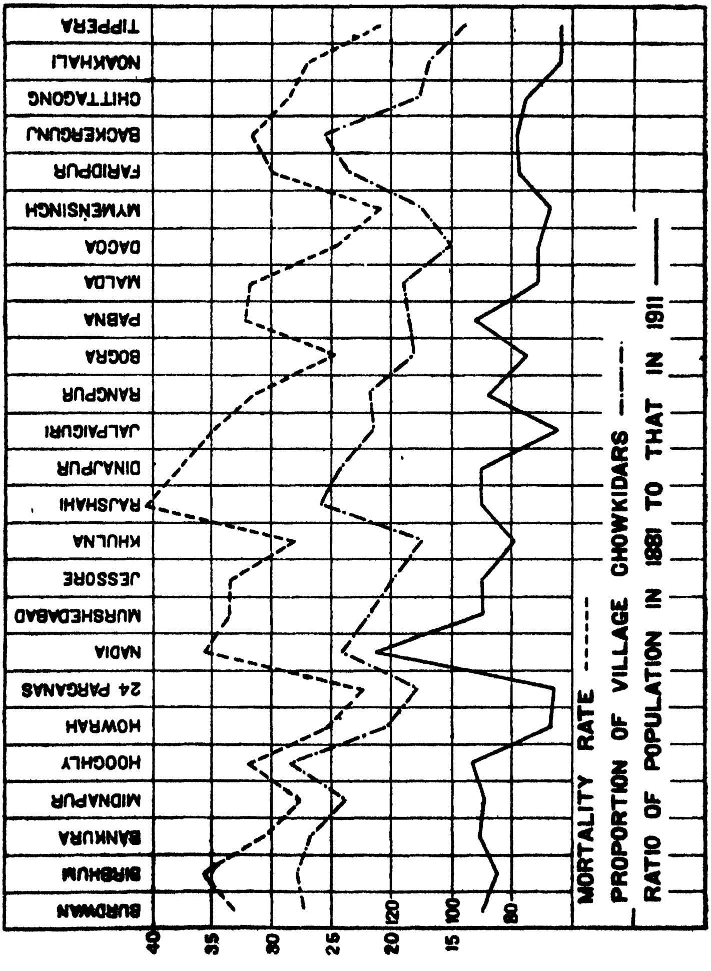

BURDWAN
BIRBHUM
BANKURA
MIDNAPUR
HOOGHLY
HOWRAH
24 PARGANAS
NADIA
MURSHEDABAD
JESSORE
KHULNA
RAJSHAHI
DINAJPUR
JALPAIGURI
RANGPUR
BOGRA
PABNA
MALDA
DACCA
MYMENSINGH
FARIDPUR
BACKERGUNJ
CHITTAGONG
NOAKHALI
TIPPERA
40
35
30
25
20
15
120
100
80
MORTALITY RATE - - - - - -
PROPORTION OF VILLAGE CHOWKIDARS —·—·—
RATIO OF POPULATION IN 1881 TO THAT IN 1911 ———

Fig. IX.

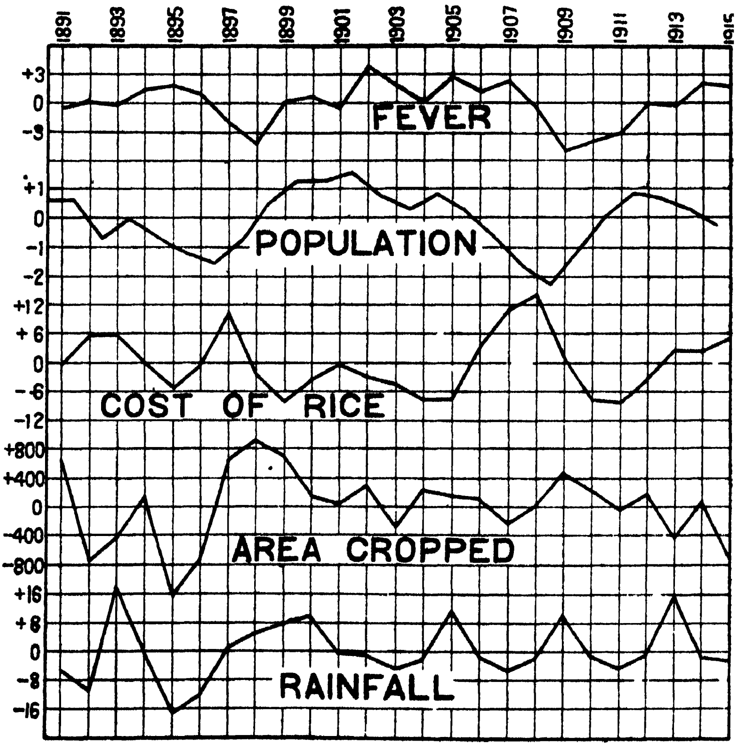

1891
1893
1895
1897
1899
1901
1903
1905
1907
1909
1911
1913
1915
+3
0
-3
FEVER
+1
0
-1
-2
POPULATION
+12
+6
0
-6
-12
COST OF RICE
+800
+400
0
-400
-800
AREA CROPPED
+16
+8
0
-8
-16
RAINFALL

FIG. X.

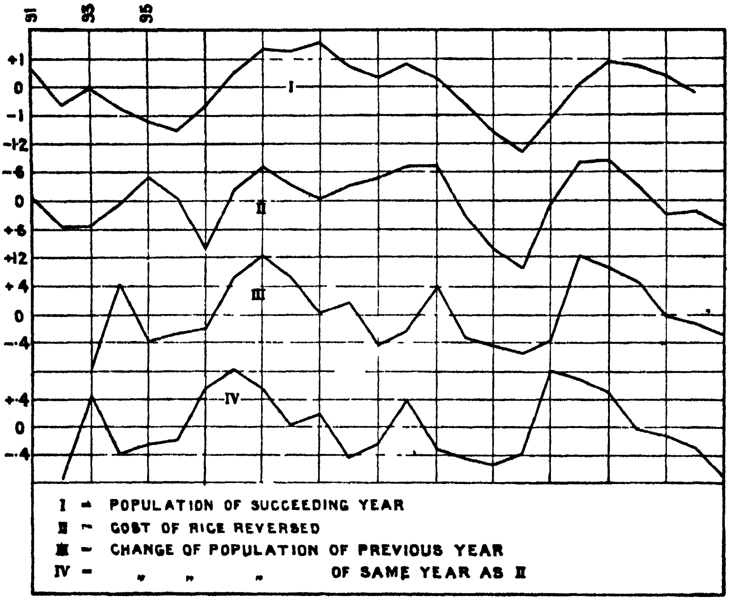
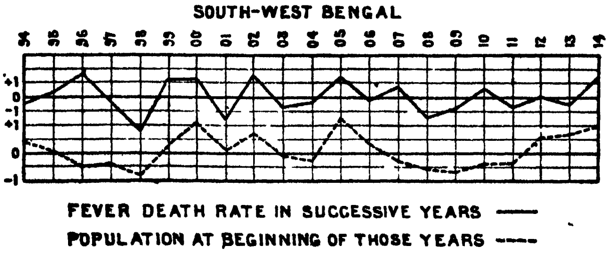

91
93
95
+1
0
-1
-1·2
-·6
0
+·6
+1·2
+·4
0
-·4
+·4
0
-·4
I
II
III
IV
I – POPULATION OF SUCCEEDING YEAR
II – COST OF RICE REVERSED
III – CHANGE OF POPULATION OF PREVIOUS YEAR
IV – „ „ „ OF SAME YEAR AS II

FIG. XI.


SOUTH-WEST BENGAL
94
95
96
97
98
99
00
01
02
03
04
05
06
07
08
09
10
11
12
13
14
+1
0
-1
+1
0
-1
FEVER DEATH RATE IN SUCCESSIVE YEARS ——
POPULATION AT BEGINNING OF THOSE YEARS ----

General Discussions.

Recent Investigations on Soil Aeration.—*By* ALBERT HOWARD, *Imperial Economic Botanist, and* R. S. HOLE, *Imperial Forest Botanist.*

The growth of a crop is only possible through the simultaneous operation of a number of soil factors—water, mineral salts, temperature and oxygen. If any one factor is in defect,[1] growth is regulated by the amount of this factor present, and is not influenced by an increase in any of the other factors. The chief object in soil management is the removal, in advance, of any possible limiting factor.

The aeration of the soil is a factor in growth which has been neglected in the past. It has only indirectly been recognized in the importance attached to a proper soil texture. The subject is now attracting more attention and it is proposed to refer to some of the recent work and to indicate the directions in which further investigation is desirable.

1. AERATION AND THE AMOUNT OF GROWTH.

Various determinations have been made of the amount of growth in cultures in which the only variable factor is the degree of aeration.

(1) *The effect of increased aeration on the root development of barley.* In water cultures, Hall[2] found that both root development and growth depend on the amount of aeration.

(2) *The effect of soil texture on growth.* Hunter[3] found that root development and growth fell off as the soil was more consolidated.

(3) *The effect of adding potsherds or sand to the Pusa soil.*[4] The addition of inert aerating agents like sand, potsherds or broken bricks to Pusa soil (a fine calcareous silt which readily loses its texture) increases the growth very markedly. In the case of Java indigo where both nitrogen and oxygen are required, the increase is as high as 40 per cent.

To follow the subject further, the structure of the soil must be considered in relation to the root development of the plant. The pore spaces of the soil are taken up by air and water, the latter occurring in thin films round the soil particles. The biological activities of the root hairs and of the soil bacteria involve respiration for which a constant supply of oxygen is necessary and which results in a continuous production of carbon dioxide. Efficient soil ventilation is therefore essential for growth.

Recent investigations at Rothamstead[5] on the composition of the soil atmosphere show that the amount of oxygen in the soil falls as the amount of carbon dioxide rises. The water films contain little oxygen but much carbon dioxide, that is, the oxygen is used up as rapidly as it is supplied.

2. VENTILATION OF THE SOIL AND THE SYSTEM OF FLOOD IRRIGATION IN NORTHERN INDIA.

Flood irrigation on fine alluvial soils interferes with their ventilation by rapidly destroying the texture and by forming a compact surface crust impermeable to air. One limiting factor—water—is removed but another—the need of aeration—is introduced. Thus over-irrigation actually diminishes the yield. This is shown by results obtained at Quetta where 13 maunds of wheat were obtained with one irrigation and only 8 maunds where three irrigations were given. In any flood irrigation system, a practical compromise between the needs of the plant for air and for water must be worked out. This has been accomplished at Quetta[1] by the proper utilization of the preliminary watering given before sowing. Under this new system, the yields obtained are often higher than those obtained with the six or seven waterings usually applied. The Quetta results have been shown by experiment to apply to the Punjab[2] and Sind where almost half the irrigation water now used could be saved. The economic significance of these results becomes apparent when it is remembered that the annual revenue derived from irrigation works in India is £5,000,000 sterling.

---

[1] In the case of the temperature factor, growth is also limited when the optimum is exceeded.

[2] Hall, A. D., *Phil. Trans.*, B, 204, 1913.

[3] Hunter, C., *Proc. of the Univ. of Durham Phil. Soc.*, IV, p. 183.

[4] Howard, A., *Bulletin* 61, *Agr. Research Institute, Pusa*, 1916.

[5] Russell, E. J., and Appleyard, A., *Jour. of Agr. Sc.*, VII, p. 1, 1915.

3. Soil aeration and quality.

It is well known that the quality of vegetable products varies with the locality, but the factors on which quality depends are still undetermined. Breed is undoubtedly one of the most important, and no improvement in cultivation can change a short-stapled cotton into a long-stapled kind. Various observations suggest that for each variety to attain its highest quality, adequate soil aeration is necessary. A few examples may be given.

(1) *Barley.*—The best malting samples are always grown on open, well-aerated soils and never on stiff, heavy clays.

(2) *Tobacco.*—All the tracts in India which have achieved a reputation for the production of tobacco of good quality are those in which aeration is above the average.

(3) *Cotton.*—Mr. Clouston's results on the open laterite soils at Chardkhuri indicate that soil aeration is one of the factors on which the quality of the staple of cotton depends.

Experience in India shows that crops will not mature properly if soil aeration is interfered with during the ripening period. Recent results obtained at Rothamstead[3] show that, on cropped land, ripening is associated with a great outpouring of carbon dioxide into the soil atmosphere. The cause of this is not known. It has been suggested that it is due to the death and decay of the fine roots after the flowering period, but this will not explain the observed delay in ripening if air is not supplied during the period of maturation. An interesting field of research lies ready to hand.

4. Other aspects of soil aeration.

If soil aeration is a growth factor, aeration must influence the distribution of plants[4] and be of importance in ecological studies. Cannon in Arizona and Free[5] of the Johns Hopkins University have shown that the poor conditions of soil aeration are correlated with the absence of vegetation in the dry lakes of desert basins, and the zonation of vegetation round these basins may be in correlation with the soil aeration requirements of the plants involved.

The importance of soil-aeration in Indian forestry[6] has recently been emphasized by a study of the factor influencing the healthy growth of *sal* (*Shorea robusta*) seedlings. Whereas water cultures have shown that water in itself is quite harmless, yet water which is held in contact with *sal* forest soil rapidly becomes highly injurious to the roots of the seedlings. Any factor which increases the amount of moisture in the soil, such as shade or bad drainage, accentuates the injurious action. Rain-water held in contact with such soil is found to become heavily charged with carbon dioxide and impoverished as regards its oxygen supply. In water culture experiments, a high carbon dioxide and low oxygen-content have been proved to be injurious to the roots. There are good grounds for believing that, in addition to *sal*, many of our most important Indian trees are very sensitive to soil-aeration, and a careful study of this factor appears to be of primary importance in Indian forestry not only on account of its effect on the establishment and development of seedlings but also because of its probable influence on the growth of older trees and its possible connection with injurious diseases.

---

[1] Howard, A., and Howard, G. L. C., *Bulletin* 4, *Fruit Experiment Station, Quetta*, 1915.

[2] *Annual Report of the Imperial Economic Botanists*, 1916-17.

[3] Russell, E. J., and Appleyard, A., *Jour. of Agr. Sc.*, VIII, p. 385, 1917.

[4] The distribution of gram in India is correlated with soil aeration. See *Agr. Jour. of India*, Science Congress Number, p. 20, 1917.

[5] Cannon, W. A., and Free, E. E., *Journal of Ecology*, V, p. 127, 1917.

[6] Hole, R. S., *Ind. For. Mem.*, I, p. 46, 1911; *Indian Forester*, 1916, pp. 343 and 344; and *Indian Forest Records*, V, 4, Parts I, II and III 1914-16.

Indian Essential Oils.—*By* DR. J. J. SUDBOROUGH, *F.I.C.*

Dr. J. J. Sudborough opened a discussion on Indian Essential Oils. Attention was drawn to the fact that many of the essential oils quoted on the London Market are obtained from raw materials of Indian origin. Some of the more important of these oils are:—sandalwood, citronella, lemon grass, ginger grass, palma rosa, cinnamon, cinnamon leaf, thymol, vetivert and East India dill.

The only oils which have been distilled for years in India are the four grass oils, and essential oil experts claim that the bulk of these oils reach England in an adulterated condition. For example it was stated as late as May 1917 that practically no pure citronella oil is shipped from Ceylon, it is almost invariably adulterated with petroleum; Java citronella oil, on the other hand, is nearly always pure.

The present war has resulted in the creation of several distilleries in India for the manufacture of sandal oil from sandalwood and of thymol from Ajwan seed. These factories are run on scientific lines, turn out unadulterated products and during war time are yielding big profits. It is hoped that in post-war times India will be able to supply the world's demands for sandalwood and thymol and that the exportation of the raw materials for the distillation of these into products in other countries will cease.

It is possible that the distillation of several other valuable oils might meet with financial success, although the matter is more complex than in the case of thymol and sandal oil owing to the fact that the raw materials are also grown in other countries and the competition with the products derived from these sources would be keen. The manufacture of vetivert and East Indian dill oils is worth further consideration whereas the distillation of coriander or anise oil from Indian seed is hopeless at the present time as the Indian grown seeds contain far less oil than the corresponding seeds grown in Europe or Asia Minor.

Attention was drawn to the need in the case of each oil of careful experiments in order to determine the most effective and economical methods of extraction, and emphasis was laid on the necessity for scientific control of the cultivation of the raw materials in order to be sure that the highest yields and best qualities of oil were found in the particular plant or seed. Examples were quoted showing the improvement in yields and quality obtained by the application of particular types of manures to lavender and peppermint plants in Europe.

The question of growing raw materials more or less unknown in India and using them for the production of oils to compete with those manufactured in other countries was discussed, some of the examples cited were:—Eucalyptus, Citriadora. E. Macarthuri, Liquidanter orientalis (Liquid Storax), Piper cubeba (Oil of Cubebs). The production of new

oils from raw materials already growing in the country was also dealt with and in conclusion the question of synthetic volatile oils was discussed.

Lectures.

Three public lectures were delivered.

"Some simple Living Things; Parasitism and Disease."—*By* MAJOR F. NORMAN WHITE, C.I.E., I.M.S.

"Aviation."—*By* LT.-COL. G. M. GRIFFITH, R.A.

"The Planetary System, Ancient and Modern."—*By* DR. D. N. MALLIK, B.A., F.R.S.E.

ABSTRACT OF PAPERS COMMUNICATED TO THE CONGRESS.

Section of Agriculture.

President:—DR. L. C. COLEMAN, *Director of Agriculture, Mysore State.*

(*Presidential Address.*)

INDIAN AGRICULTURAL DEVELOPMENT.

The Development of Agriculture in India has formed the subject of an interesting and valuable report by Mr. Mackenna which no doubt all of you have read. That report shows quite clearly that the Agricultural Departments in India have already justified the broad-minded policy inaugurated by Lord Curzon, through the increased returns which they have enabled and are enabling the Indian agriculturists to obtain from their land. It is, therefore, unnecessary for me to attempt an apologia for organized agricultural work in this country even were I competent to provide one. It might, however, be profitable for an unofficial scientific body, such as the Indian Science Congress, to examine the means which are being utilized to improve Indian agricultural conditions and to consider in how far those means are calculated to lead to permanent results. It would, I think, also be well within our province to point out certain dangers which lie ahead, and to suggest means for avoiding them.

The two lines of work which appear to have yielded the most striking tangible results during the past ten years are:—(1) The improvement of the staple crops of the country by selection and the organized distribution of the improved seed obtained, and (2) the transfer of the best indigenous methods of cultivation and the best indigenous implements as utilized in certain areas to other more backward parts of the country.

The reasons why these two lines of work have produced tangible results so rapidly are fairly obvious. In the first place, neither demands on the part of the agriculturist an expenditure of money or labour greatly in excess of that which he has been accustomed to devote to the cultivation of his land. In the second place, neither requires, under the present conditions of low production which prevail in this country, very long or very accurate experimental work to enable agricultural experts to satisfy themselves as to the suitability of their introduction. The various Departments of Agriculture in India have been quick to appreciate these facts and we find to-day in many provinces as much time and money being devoted to growing and distributing improved seed and to popularizing efficient indigenous agricultural practices and implements as on all the rest of the agricultural work put together I do not wish it to be thought that I consider plant breeding as a kind of experimental work which requires less careful scientific control than others. I wish only to emphasize the fact that in a country such as India. where scientific work in connection with agriculture dates back hardly more than twenty years, improvement by selection is comparatively easy, and plant breeding work in India has, up to the present, been mainly confined to selection. Hybridization has been rarely resorted to. We have. it is true, the work of the Howards on wheat, Leake's work on cotton and Barber's work on sugarcane, all of which are rich with promise for the future; but the improved varieties of crops which are being distributed on such a large scale in Madras, the Central Provinces, the United Provinces, the Punjab and Bengal are, in practically all cases, the result of selection. As time goes on we shall no doubt find ourselves in the same position as the countries of Europe, where an immense amount of the most careful and painstaking scientific work will be required to evolve a type which is distinctly better than those already being grown, but we have not yet reached that stage of development.

As so much emphasis has been placed on plant breeding during the past few years it will be interesting to enquire just what are the probabilities of improvement in this direction About eight years ago Dr. Hopkins of the Illinois Experiment Station sent a circular letter to various Agricultural Authorities in Europe, including such well-known men as Hall, Von Seelhorst, Schneidewind and Wagner, pointing out that, according to reliable statistics, the average yield of wheat and other cereals had increased in Europe by about 100% within the past century and enquiring what proportion of this increase could be attributed to each of the following four factors :—

(1) The use of improved seed.

(2) The use of plant food in commercial fertilizers and stable and green manures.

(3) Better rotation of crops.
(4) More thorough tillage.

The authorities consulted, while differing somewhat in their views, were practically agreed that the use of better seed had not provided more than 20% of the total increase in production. It will be interesting to compare with this estimate the results which have been obtained with certain crops in India. In parts of the Central Provinces, selected Roseum cotton yields about 25% more than the mixture previously grown. Pusa 12 wheat gives an increase of from 10 to 25% in certain definite areas of the United Provinces, Bihar and the Punjab, but no definite figures are available. The most striking results thus far obtained are, perhaps, those of Hector in Bengal who has been able to isolate a strain of paddy yielding 30% more than the ordinary varieties grown by the ryot. From these examples, and I think they are fairly representative, it would appear that plant breeding promises to do rather more for the Indian ryot than it has done for the European farmer. It is, however, pretty certain that this work alone will be of little permanent benefit unless it is accompanied by improvements along other lines. In fact it may be argued with a certain amount of plausibility that plant breeding work by itself is, in many parts of India, likely to lead to permanent harm rather than to permanent good.

How, it may be asked, can such an opinion be supported ? It is hardly necessary to repeat here the view which has been so frequently expressed, that we have had, in many parts of India, for centuries a state of agricultural equilibrium. The soil is generally very poor, and the ryot uses on it very little manure. The crops he harvests are correspondingly low and the varieties or mixtures of varieties which he grows are no doubt nicely adapted to the existing conditions. If we now isolate strains, which in the first instance yield us 20% or 30% more than the varieties or mixtures of varieties usually grown, this will result in an increased drain on the soil and unless such a drain is counteracted by an increased return of plant foods to the soil we are likely to find, in a comparatively short time, the yield from these improved strains sink back to or below the level from which we started and to discover that the soil itself has been further impoverished. We are, no doubt, still too ignorant of the processes which are going on in the soils of India, and more especially of the biological factors which influence plant production, to speak with certainty on this point; but signs are not lacking that something similar to what I have foreshadowed is likely to occur. It should be noted, however, that the above remarks refer particularly to such crops as cereals and oil seeds where an increase in yield represents a definite increase in the plant food taken from the soil. In the case of such a crop as cotton where increase in yield commonly results from an increase in ginning percentage, the amount of plant food removed from the soil should be approximately the same whether the old mixture or the improved strain is grown.

I do not wish to be understood from these remarks as intending to belittle the value to Indian Agriculture of plant breeding and the distribution of improved varieties. There is, however, a danger that the very striking results which have been obtained from this kind of work within the past ten years will make both scientific workers and the general public in India blind to the immense importance of other problems which face us, problems which, in many cases, will require the most patient and painstaking investigation by highly trained research workers for their solution. I shall return to this subject later and shall, in the meantime, turn to some of the other problems awaiting us.

The question of the conservation, improvement and utilization of our manurial resources is a subject which has not received that amount of attention which it deserves. From the time of Voelcker onward we have had warnings with regard to the serious drain which the export of oil seeds and bones has had upon our soils. The attention of the Board of Agriculture in India has been turned towards this question many times, but that body has not been able to reach any very satisfactory conclusions. Prohibition of export is a measure which seems too drastic, and even the imposition of an export duty would be certain to meet with serious if not insurmountable opposition. The present, however, when a practical prohibition of export exists, is a most favourable opportunity for popularizing the use of these valuable products of Indian soils. We all trust that the conditions which have forced the present prohibition upon us will never recur, but it would, I submit, be almost criminal negligence on our part if we did not make the best use of the opportunity which it affords. The popularisation of use of oil-cakes as cattle foods and manures seems to me a matter of urgent importance. In this connection I may mention that an extensive campaign for the popularisation of oil-cake as a manure for sugarcane is being organized in Mysore State, and if the success already achieved can be taken as a guide we should see within the next five or six years practically the whole of our oil seeds being utilized for the improvement of our own soils. I anticipate that through manurial improvements alone an increase in our sugar yields of one hundred per cent will be effected within the next ten years.

This, however, is only one of the manurial resources which have to be considered. The knowledge of our resources of mineral manures, more especially of phosphates, is very incomplete, nor has Government taken up seriously the question of exploring them thoroughly or of utilizing them to the best advantage. Finally the question of the fixation of atmospheric nitrogen—a question which is engaging the attention of Europe, America and Japan to an ever-increasing extent—has scarcely been touched in India. Recently the Government of Mysore has taken up this question in connection with the development of the natural water power resources of the State, and there are prospects that a factory for the fixation of nitrogen on a fairly large scale will be started in the near future. The effect that a cheap and adequate supply of nitrogen would have on the returns from most of our staple crops is almost incalculable. Lastly, we have the question of green manures and we must confess, I think, that we have still a very long way to go before we can tell ryots how best to utilize these important improvers of soil fertility. The fact that at present, in some parts of India at least, more than fifty per cent of the nitrogen content of the green manure is lost and thus never becomes available for soil improvement indicates clearly enough what an important field of investigation we have here

The question of the utilization of oil seeds and other forms of commercial manures is, as has very frequently been pointed out, intimately bound up with the question of the amount of capital which the ryot has available. It is also closely connected with the education of the agricultural population for a proper use of commercial manures presupposes a fairly high degree of intelligence.

As regards the question of capital, there is strong evidence that the condition of the Indian agriculturists has considerably improved during the past few years and there is undoubtedly an increasing tendency for him to spend money on the cultivation of his land. This, we believe, is partly due to the efforts of the Agricultural Departments in India. That a demand for commercial fertilizers is beginning to arise among the ryots of India was an opinion generally accepted by the Board of Agriculture at their recent meeting in Poona. The influence of the co-operative movement is also increasing rapidly, and its effect upon the economic condition of the agriculturist during the next twenty years is bound to be enormous.

Turning to education, the demand for compulsory primary education is becoming more and more insistent. The number of schools in rural areas is increasing rapidly and provided our rural education is conducted on rational lines it will lead to an awakening of the Indian agricultural population which is bound to have the most beneficent effect upon the development of our greatest industry. I have used the expression " on rational lines " with a purpose, for there seems to me the gravest danger that we shall in India commit the same mistakes which have been committed in other parts of the world and shall find the sons of our agriculturists leaving school with a distinct distaste for the occupation upon which the future prosperity of this country depends.

In the past, agricultural workers in India have been in the difficult position of having to justify their existence to two separate bodies. On the one hand, they have had to prove to an at times somewhat critical Government not only that the work they were endeavouring to do was likely to lead to practical results commensurate with the money which was being expended upon it. but also that the results obtained warranted the expenditure of very much larger sums of money. On the other hand, they have had to persuade a conservative agricultural population that improvements on existing methods are not beyond the bounds of possibility. Both these difficulties have been to a most gratifying extent surmounted and signs are not wanting that ere long we shall be landed in the opposite difficulty of being overpowered with demands for a guidance which we are not able to furnish.

What do you require to fit us in the best possible way to meet the emergency which I have foreshadowed ? We need above all things a much larger and better organized research staff. Any one who has studied carefully the reports of the various Agricultural Departments and more especially the reports of experimental farms must realize that much of the experimental work which is being attempted is not likely to be of more than ephemeral value. This is more especially the case with regard to manurial experiments. All the experience of Europe goes to show that the most important increases in crop production have come as a result of the scientific use of manures. Germany is to-day able to feed herself largely because of her use of commercial fertilizers and she has been taught how to use them to the best advantage through the immense amount of accurate experimental work which has been carried out on stations scattered all over the country. How much of this accurate experimental work do we find being done in India at the present ? Many of our experimental farms are scarcely worthy of the name because there is not sufficient scientific supervision and because there is, in too many cases, a demand that the farm shall show at the end of the year a favourable balance sheet. I am not prepared to assert categorically that an experimental farm which shows a profit stands thereby condemned of masquerading under a false name, but I am prepared to assert that if the time of the farm staff and the land on the farm are devoted as they should be to accurate experimental work such a farm cannot be worked at a profit. The desire of the general public to see the results of experiments rather than the processes by which those results are obtained is a natural one. It should be satisfied by the only rational method, namely demonstration on special farms or on the fields of cultivators. An experimental farm should be looked upon as an outdoor laboratory, not as a model or demonstration. There may be room on it, as there is in a chemical laboratory, for rough qualitative tests, but to stop with these as I fear too many of our farms have done in the past is fatal to permanent progress. That we have not suffered more as a result of this foolishly economical policy is due to the fact that we have, for the most part, been dealing with fairly simple problems for which the approximate results obtained have furnished information upon which recommendations could be made with some degree of safety. As time goes on such approximate results will become steadily less useful and. unless we have substituted accurate experiments for the crude methods which now only too frequently obtain, we may find ourselves in the unfortunate position of having to give to the ryot when he asks for bread, not a stone perhaps, but half-baked dough.

The question of research and experimental work is a pressing one. As I have already pointed out, the introduction of improved varieties is not likely to take us very far unless it is followed up by improvements in manuring and cultivation. An improved variety does, however, give the agriculturist an incentive towards better methods of treating his land, because it shows him that there are possibilities of increased profit from agriculture outside of those furnished by a rise of prices. The moment it becomes apparent that a crop will repay better soil treatment the question of just what treatment is soundest economically becomes one of the first importance. The questions which arise in connection with this subject are as many and varied as are the soils and climatic conditions of India and require the most careful investigation, not only at one or two special research institutes, but also at a large number of experiment stations scattered all over this broad land, manned by thoroughly trained officers who are filled with a zeal for accurate scientific work. I strongly dissent from the view one sometimes hears expressed that observations in the field can in any way take the place of accurate experiment or that fewer precautions to avoid error are required in the case of agricultural than, for instance, chemical investigations.

In our work we are, I think, being tempted (I was about to say, being compelled) to confine ourselves to problems of the immediately practical character. This is no doubt largely due to the very small number of men engaged in agricultural investigation. It is also, I fear, partly due to our being afflicted to a certain degree with the shortsightedness which has landed the British Empire on the brink of disaster. If agricultural workers in India do not themselves insist upon the importance of fundamental investigation work, even when such work does not hold out prospects of returns in the near future, we are hardly likely to find Governments and the general public viewing such matters seriously. There was a time, and not so many years ago, when an insistence upon the importance of research might have been looked upon as a sort of lame excuse for failure to produce results of practical value. That time is, I think, past and if we now fail to lay foundations deep and broad for the future development of agriculture in India we shall stand convicted by those who come after us of a criminal neglect of duty.

On a new method of comparing the growth of Cane in different localities.—*By* C. A. BARBER.

The author describes a series of measurements of the cane plant, whereby it is claimed that various growth characters can be compared, both of different varieties in the same place and the same varieties in different places. From this comparison, deductions can be drawn as to the suitability of places for cane growth and the kinds of cane which are likely to succeed best at any one spot. The literature of the subject is meagre. Attention has been recently called in the *Louisiana Planter* to the importance of cane measurements from the crop point of view, while desultory work has been done in Java for a considerable period. The chief workers in Java have been Kobus, Kamerling and Kuijper, and summaries are given of their main results. Lately, Taluqdar has published a paper on cane growth in the *Bihar and Orissa Agricultural Journal* in which the influence of weather conditions on growth is discussed.

In all these cases careful measurements have been made on individual canes at different periods of growth. The method adopted in the present paper differs radically, in that large series are measured at widely different localities throughout India. These measurements which include the whole cane, the living shoot, joints, laminas and leaf sheaths, have been taken for twenty canes in each plot dealt with, and the complete series of measurements on any one plot is termed a "unit" observation. Seven canes were selected for study, *Saretha*, *Chin*, *Khari*, *Pansahi*, *Chynia*, *Baroukha* and *Mungo*, and some or all of these have been studied at ten different places, from Madras to the United Provinces. There are 89 unit observations on which the results are based. As the whole seven varieties are not grown in all the places, a series of safeguards have been introduced in the comparisons, and these are described.

Certain results are given in tabular form and otherwise, showing the effect of the local conditions on general growth and on special varieties, and the general suitability of selected varieties for different localities. Lastly, two special cases are considered, (i) The effect of the season on cane growth and (ii) periodicity in the length of joints; both of these are shown to be directly deducible from the curves of joint-length prepared from the measurements. The paper is of a preliminary character, because of the imperfection of the record; it is intended to complete the series of measurements during the current season.

Timber supplies in India.—*By* R. S. PEARSON.

General discussion as to the supply of timber in India. Comparison of consumption of timber per head of population in India and Europe. Comparison of the price of timber in India and England. Uses of timber. Methods by which the supply can be increased:—

(i) the creation of plantations and more intensive management of existing forests,

(ii) the utilization of timbers other than Standard timbers and discussion on the marketing of such timbers,
(iii) the antiseptic treatment of timber,
(iv) the development of communication in the forests, and
(v) imported timbers.

Forest grazing and the Nellore "Kancha" system.—*By* C. E. C. Fischer.

1. Forest grazing is inimical to the interests of the cattle-breeder as well as detrimental to the forests themselves.
2. The practice of forest grazing is deep-rooted in Southern India.
3. The "drove" cattle and goats are the most harmful; the best cattle are stall-fed or pastured on special areas.
4. The long-standing "Kancha" system in Nellore.
5. The extension of the "Kancha" system to Government forests in the Nellore District.

The economic Aspect of Indian Silviculture.—*By* E. Marsden.

Concentrated exploitation yields the greatest profit. Natural regeneration in temperate climates. Plantations in tropical climates. Softwoods worth more attention. Economic significance of thinnings. Method of working bamboos.

Cocoanut: The Wealth of Travancore.—*By* N. Kunjan Pillai.

The importance of the cocoanut industry to Travancore is first discussed from the standpoint of the external trade of the country, the income and prosperity of the people and the revenues of the Government which depend to a very great extent on the cocoanut produce.

A short reference is then made to the origin of cocoanut cultivation on the Malabar coast, the various theories advanced in connection therewith and the linguistic evidence which supports the theory of its importation from Ceylon.

The probable acreage of the crop, the annual output, the quantities exported and consumed locally are then shown.

The methods of cultivation now followed by the raiyats are next dealt with Reference is made to the numerous varieties met with in Travancore and to the principles that ought to be kept in view in the selection of varieties. The present methods of cultivation include several excellent points which can be recommended for adoption in other countries. These points are fully dealt with.

The defects of cultivation in Travancore are next pointed out, prominence being given to the question of manuring. Several series of experiments on manuring have been carried out by the State Agricultural Department and highly interesting and satisfactory results have been obtained therefrom. These experiments are fully dealt with in this part of the paper. It has been shown that the output of cocoanuts in Travancore can be more than trebled by the adoption of a proper system of manuring.

The subject of pests and diseases is next dealt with as briefly as possible. Under pests a new insect which has been found to attack the leaves of the cocoanut palm is described, and under diseases prominence is given to the root disease which is the most serious of all the cocoanut diseases in Travancore. The work done and proposed to be done for the eradication of this disease is also described.

Finally the question of the development of cocoanut industries is dealt with. The coir industry is practically the only one that is now being carried on and it supports nearly 180,000 persons. The major portion of the export trade in cocoanut produce is however in raw products only. These are sent to foreign countries where they are converted into various finished articles. The manufacture of these articles in the country itself will result in an enormous increase to the national wealth of the country.

The cocoanut industry is the main factor that contributes to the present prosperity of Travancore, but immense potentialities for increasing this prosperity lie latent in the industry. The main objects of this paper are to point out the present position of the industry in Travancore, the work that is being done towards its development, and the possibilities that still exist for its further development.

The determination of the Indigo soils of Bihar.—*By* W. A. DAVIS.

Notwithstanding an increase in area under indigo in Bihar within the past year the yield has decreased. An examination of records of yields from certain factories show that this decrease in yield both of seed and of indigo has been continuing for some time. This the author holds to be due to a deficiency in available phosphates in the Bihar indigo soils. He discusses the influence of unfavourable climatic conditions and of waterlogging on the crop and contends that these will not account for reduction of yield and appearance of the wilt disease. He comes to the conclusion that unless superphosphate manuring is immediately adopted on an extensive scale it is practically certain that in the next few years the indigo crops will fall off enormously each year until they reach a very low level.

The author also discusses the profitability of using superphosphate at present prices, the methods of application, and the general question of the future of the indigo industry.

The improvement of "Tinnevellies" cotton.—*By* R. THOMAS.

The author after giving a short description of the two species which go to make up Tinnevellies cotton and of the area where they are grown enumerates the main lines of work for the improvement of cotton cultivation in this area which have been taken up by the Madras Department of Agriculture. These lines of work are as follows:—

(*a*) The selection of unit strains of cotton and the propagation and distribution of the best selections on the largest possible scale.
(*b*) The co-operative sale of cotton.
(*c*) The formation of co operative seed unions which undertake the propagation and distribution of improved strains.
(*d*) The introduction of drill sowing implements.
(*e*) The eradication of a low grade cotton of the "Neglectum" type.

In the paper the author confines himself to a discussion of improvements which have been produced in the staple of "Tinnevellies" cotton by breeding work and the methods followed in making these improvements available to the cotton growers in the way of obtaining for them better prices for the superior cotton grown. He estimates that in 1917 the work of the Department in this connection had increased the profits to cotton growers by Rs. 7 lakhs.

Forest Insect conditions in India.—*By* C. F. C. Beeson.

A comparison of forest insect conditions in British India with those in forest regions of other parts of the world, shows that Indian forests are far less seriously menaced by primary insect pests (*i.e.* which are able to attack and kill healthy forest trees), than are the forests of Europe, the United States of America, and Canada. In the forest areas of Central Europe the principal *primary* pests are (*a*) defoliators, *e.g.* the Nun, Moth, the Pine Caterpillars, the Brown-tail and Gold-tail Moth, and (*b*) bark-beetles, *e.g.* the Typographer beetle, the pine bark-beetle, the spruce bark-beetle.

In North America and Canada primary pests include among (*a*) defoliators, the Large Larch Sawfly, the Spruce Budworm, the Gypsy and Brown-tail moths, and among (*b*) bark beetles, several coniferícolous species of the genus *Dendroctonus*.

As a result of the depredations of the defoliators and borers above mentioned, hundreds of square miles of forest have been from time to time completely destroyed, both in the virgin forests of North America and the artificial forests of Central Europe.

Indian forests on the other hand, though abundantly supplied with pests capable of causing serious technical injuries to living trees and to timber, do not possess species which are able to kill off healthy trees over appreciably large areas. The past history of forest management in India also indicates that extensive outbreaks of endemic *secondary* species are of rare occurrence. These conditions of inter-relationship between forest insects and their hosts would appear to be normal in forests of tropical and sub-tropical regions.

The absence of primary insect damage in India is attributed partly to the present sylvicultural methods which protects the crop against fire and irregular or excessive fellings, and which have not yet extensively altered the natural facies of the primitive forest. The more recent working plans, however, tend towards the production of artificial forests in which the irregularly stocked uneven-aged natural forest is replaced by a series of uniform even-aged crops with an increased proportion of the valuable species. Such forests are more liable to serious insect injury, and it is in them that we may expect to find the existing secondary pests assuming under epidemic conditions the role of primary pests.

The Burmese Sesamum varieties: Notes on their variation and growth.—*By* A. McKerral.

After discussing the literature dealing with this crop and the importance of Sesamum to Burmese agriculture, the author proceeds to describe the different varieties grown in Burma and their variations, using as a basis material collected from the principal Sesamum districts and grown at the Talkon Agricultural Station. The subject is dealt with under the following heads:—The leaf, branching habit, colour of the flower, the capsule, colour of the vegetative parts, pubescence and seed colour.

The description is followed by a tentative classification of the Burmese Sesamums based on the branching habit, vegetative period and colour of the seed and a discussion of the abnormalities which occur. In conclusion the author discusses the possibilities of improvement, more especially through single plant selection.

The "*Patti*" as a nucleus of co-operation and a framework for improvement in agriculture.—*By* S. S. Nehru.

Apart from the co-operative organisms of exotic growth which are thriving with obvious benefits to agriculture, there is also a co-operative organism of indigenous growth even if rudimentary in character,—the Patti, as it is styled. It is only a nucleus of co-operation, but represents an admirable and, for its modest scope, efficacious framework for some very elementary yet none the less pressing improvements in agriculture. A brief attempt is here made to show how these improvements materialise, by working out a typical case in an important section of these provinces.

Unevenness of individual plants in field crops, partly due to position of seed in the ground while sowing or planting —*By* M. L. KULKARNI.

The great thing to be aimed at in scientific farming, is to get a uniform crop. If the land is rich the crop may be bumper, if it is poor the crop may be poor in general. But actually such is not the case. The growth of individual plants in a field crop is universally seen to vary considerably, some being tall and some short. Several reasons are assigned for this variation, *viz.* condition of soil, depth of seed put in, amount of moisture, amount of air, etc., etc. A new reason, *viz.* "Position of seed in the ground while sowing or planting must have some effect on the early or late germination and consequent variation in the growth of plants," suggested itself to the writer. He accordingly started experiments on field scale on sugar-cane, with single eye-bud with the eye-buds placed upwards. The experiments seem to be promising. Further, he has taken up pot experiments of planting various other seeds, such as, cotton, gramsan, wheat, jowar, maize, etc., etc., with the apices in different positions, *viz.* upwards. sideways and downwards. Interesting results are being observed, regarding early or late germination and carrying up seed-coat, etc., according to positions of the seeds. Further pot experiments are in progress for detailed information.

Note on dissections of sugarcane stools, and the varying character of canes in the same clump.—*By* C. A. BARBER.

This is a note dealing with the known differences of sugarcanes of the same variety in the field when collecting samples for analysis and study. It shows that such differences are inherent in each variety, and traces their origin to there being branches of different orders in each clump. The branches of higher orders are thicker, have longer joints and are poorer in sugar content, and their visible differences are clearly shown in lantern slides.

The branching of the cane stool is discussed, and it is shown that this varies in different groups of canes, so as to be a character of some importance in classification. Branching formulae are presented for some classes, and it is seen that there is a regular progression from that for the wild Saccharums, through different classes of indigenous Indian canes, to the thick canes of the tropics.

The spraying of tea in North-East India.—*By* A. C. TUNSTALL.

The treatment of pests and blights of tea in North-East India by spraying has only recently been seriously considered. The climate of the tea districts and the special nature of the growth of the tea plant render spraying a difficult operation. The situation of the gardens in some districts renders co-operation necessary in the treatment of many epidemic diseases. A co-operative scheme has been favourably received by the planters in one district. The spraying machinery formerly in use on tea gardens needed special adaptation to the conditions. The spray fluids must not be such as are likely to cause harm to consumers of the manufactured tea. Machines and fluids must be very simple to use as the managers on tea gardens are unable to give continuous supervision to any one operation. Dry dust spraying could be a very economical method of treating pests and blights if a satisfactory powder were forthcoming.

Rhizoctonia in Jute: the inhibiting effect of Potash manuring.—*By* R. S. Finlow.

The results of an investigation into the manurial requirements of jute indicate a connection between the incidence of attacks of the fungus Rhizoctonia on the crop and the potash content of the soil.

North-Eastern India comprises two great soil divisions, *viz.* (1) the new alluvium, which consists of silt recently deposited by rivers and (2) the old alluvium, which is a red laterite soil of much more ancient origin.

The new alluvium, which generally contains no free carbonate of lime, is well supplied with lime salts, and is often very rich in phosphoric acid and in potash. The average percentage of potash is about 0·7, and individual samples, have been found to contain as much as 2·0%. In the silt tract, jute is commonly grown on the same land for several years in succession, but it is rare to see more than an individual plant, here and there, suffering from Rhizoctonia.

The red soil tract or "old alluvium" differs widely from the silt, being very deficient in lime and phosphoric acid. The total potash content averages about 0·3%, which would be considered, and indeed appears to be, sufficient for fodder and pulse crops. On the other hand, jute is liable to suffer seriously from Rhizoctonia and, on two occasions, only extravagant manuring with cowdung and nitrate of potash saved young crops of valuable pure lines. This experience led to more detailed investigation, and it was ultimately found, that the inhibiting effect, on Rhizoctonia, of the manures supplied, was due to the potash. It has also been found that the application of 100 pounds of K_2O per acre on the red soil at Dacca increases the yield of fibre by about 30%.

In 1917 jute was grown on a series of plots at Dacca for the third year in succession. The plots which received special potash manuring never contained as much as 1% of plants suffering from Rhizoctonia while nearly 10% of the plants in plots to which no potash salts had been applied were always diseased.

In collaboration with the Imperial Mycologist the work is being extended in other directions and suggestive results have been obtained.

Immunity and Disease in Plants.—*By* E. J. Butler.

It is necessary to distinguish between the avoidance of disease, the endurance of disease, and true immunity or resistance to disease.

Several instances are given of the ways in which plants may avoid a disease to which they are not in any way truly resistant. They may be grown in areas with conditions of climate which the parasite cannot stand, it being shown that many of our most important cultivated plants have a wider range than their parasites. Or the date of sowing may be altered to a period when the temperature or humidity is unsuitable for the germination of the spores of the parasite. Or varieties may be grown which mature quickly, before the parasite can do them much damage.

Cases are given of successful endurance of the attacks of a plant parasite. These are mostly connected with the vigour of the plant, and can be modified by different methods of cultivation and manuring.

True resistance to disease differs from the above in depending on some structural or physiological characters of the plant which prevent successful invasion by the parasite.

The structural characters of importance in specific cases are detailed, and examples given of their modification by external conditions such as light, humidity, and nutrition

The physiological characters which influence immunity are more difficult to define, but are undoubtedly the most important class of factors in the majority of cases They are connected with the nature of the cell contents, not with the characters of the walls or other structural peculiarities Sometimes the living part of the contents—the protoplasm—is chiefly involved, sometimes the non-living part—usually substances dissolved in the cell sap—is more important Amongst these substances, tannin and organic acids are shown to occupy a prominent place

The relative resistance to specific diseases of different varieties of plants is discussed, and indications given of the physiological characters most probably concerned

The external conditions which modify physiological resistance are chiefly climatic and nutritional Resistance in one locality does not necessarily imply resistance to the same disease in another locality Soil is often important, the influence of calcareous soils being particularly evident in several diseases Nutrition often has a strong influence on disease and there is a very wide field for further research in this direction It is shown that all three of the more important plant foods obtained through the roots—nitrogen, phosphorus, and potassium—may, according as they are present in excess or are deficient, have a marked influence on susceptibility to disease How they act is not known, and attention is drawn to this problem as one on which Agricultural Chemists might throw much light if they could show how specific fertilisers influence the chemical composition of the plant cell

Bacteriotoxins in soils —*By* C M HUTCHINSON

The future of applied entomology — *By* F M HOWLETT

Northern cotton —*By* G R HILSON

Improvement of cotton in the Punjab —*By* D MILNE

An account of a year's working of a large Indian estate (Pusa, Bihar) —*By* G S HENDERSON

Some problems arising from the successful introduction of American cotton in the Western Punjab —*By* W ROBERTS

Some factors affecting efficiency in the use of canal water —*By* W ROBERTS *and* E FAULKNER

Some observations about soils of the North-East India tea districts —*By* G D HOPE

Soil surveys in the Punjab —*By* B N WILSDON.

Beginnings in insect physiology and their economic significance —*By* S K SEN

Manures in relation to soils and crop production in the Central Provinces —*By* D. CLOUSTON

Section of Physics and Mathematics.

President—DR. WALI MOHAMMAD, *M.A., Professor of Physics, M.A.O. College, Aligarh.*

(*Presidential Address.*)

RECENT PROGRESS IN MAGNETO-OPTICS.

In opening our proceedings to-day, allow me at the outset to express my deep sense of the honour the Indian Science Congress has conferred upon me in asking me to preside over this section and in giving me the privilege of addressing you on a scientific subject.

As you know, the topics of the addresses vary from year to year and the variation is due to the predilection of the individual president. The types of addresses are not many. An address may deal with an account of some particular research or with the general progress of science. It may refer to recent discovery, or to those particular parts of it that have engaged the personal study of the president Lastly, it may deal with some controversial matter

I think, we have in our meeting those who wish to hear something of the most recent developments of scientific labour and to get a general survey of modern advances in some one or other of the branches of sciences to which our section is devoted

The subject of my address is " Recent Progress in Magneto-Optics." We know that the short period 1895-96 marked the turning of several new chapters in the history of physics. The epoch-making discovery of X-Rays by Rontgen was immediately followed by the equally remarkable discovery of Radio-Activity by Becquerel It is true that Faraday's discovery of the effect of magnetism on light dates back to 1846, but it was in 1896 that Zeeman, following in the footsteps of Faraday, discovered the effect known after his name, and laid the foundations of magneto-optics.

It is curious to note that none of these epoch-making discoveries was made in England, though like so much of the scientific research of the present day, they go back for their origin to the fundamental investigations of English men of science. The discovery of the Rontgen rays had its origin in the accumulation of knowledge of the conduction of electricity through gases—a branch founded and developed by eminent British scientists, the discovery of the phenomena of radio-activity arose indirectly from the study of Rontgen rays and the discovery of the Zeeman effect was a logical extension of the earlier work of Faraday. It is also curious to find that the study of the Zeeman effect attracted the attention of very few in England and that not many contributions of any importance have been made by English physicists. This can be explained perhaps in this way. A large part of the work in modern physics for the last 20 years has been intimately connected with the problem of the structure of the atom, and among several very powerful methods of attack developed for solving the problem, those of radio-activity and X-Rays absorbed the attention of the British scientists, in whose hands they have yielded such wonderful results. The only literature on magneto-optics available in the English language consists of an admirable monograph by Zeeman published in 1912. Since that time some further work has been done and it is proposed to give here a brief outline of the recent progress made and to review a few of the more important results obtained.

My esteemed friends, the mathematicians, should have the satisfaction of knowing that though the subject is primarily an experimental one, it is a subject in which theory and experiment have gone hand in hand—the mathematical theory predicting results verified by experiment, suggesting modifications in the theory accepted by the mathematicians. No one is more indebted to the mathematical genius of Lorentz and Voigt than Zeeman himself.

Instruments of Observation.

For the successful observation of the magnetic resolution of spectrum lines, three essentials are requisite: (1) a bright source of light, (2) a high resolving power and (3) a strong magnetic field.

As for (1) spark, arc, arc in vacuum and flames remain the principal sources of light. The Wehnelt cathode lamp as devised by the writer has proved a very satisfactory source of fine and bright lines suitable for this purpose and the lamp has been successfully used by some American, German and Japanese investigators.

As for (2) gratings, Fabry and Perots' etalons and interferometers, Lummers' plates and Michelson's echelon still remain the chief spectroscopic accessories. Rowlands' concave grating is yielding its place to Michelson's plane grating and the "crossed spectra" produced by crossing spectra from any two of the above named high-resolving apparatus are proving useful in removing ambiguities and eliminating "Ghosts".

And lastly for (3) the Du Bois magnet has been improved upon by Weiss who by the use of specially designed pole-pieces of ferro-cobalt and slip coils has obtained field strengths as high as 40 to 50 kilogauss. Deslandres and Perot have recently suggested several methods of producing intense magnetic fields. One of them consists of adding a magnetising coil to a Weiss magnet. Another method consists of allowing a very large current to circulate round an insulated strip of high conductivity metal (silver or copper) cooled by a liquid—no iron being employed at all. They hope to produce a field of 100,000 gauss. Professor Kammerlingh Onnes has suggested the use of liquid air or liquid hydrogen for cooling the coil and hopes to obtain still higher fields. There is no doubt that the employment of very high fields would unravel some of the perplexing mysteries and allow us to understand the magnetic phenomena much better.

Direct Effect.

Since Zeeman's paper on the doublets and triplets in the spectrum produced by external magnetic fields, scores of important papers have appeared embodying the results of more or less systematic work on the magnetic resolution of spectrum lines. Almost all the elements have been investigated, and though many lines have baffled investigation, a large number have yielded results which are highly interesting.

The accumulated data indicate that spectrum lines split up into types which are fairly well classified and which, independent of any spectrum formula. prove that the lines of a series are grouped together. Hence the use of the magnetic resolutions in the study of spectral series. However, the study of the Zeeman effect has not resulted in the discovery of the laws of distribution in the spectra of non-series lines.

Most of the investigators of the Zeeman effect have confined themselves to the study of lines in the visible region of the spectrum only. The reason is not far to seek. Almost all the apparatus of high resolving power embodying the principle of interference, are usually made of glass and are obviously not suitable for observation in the ultra-violet or infra-red regions.

Quite recently Nagaoka and Takamine have taken up the study of the Zeeman effect in the ultra-violet region and have investigated a few lines. Croze, on the other hand, has extended his examination of the lines and bands of hydrogen, oxygen and nitrogen, into the infra-red as far as the photographic methods allow—up to $\lambda = 9000$ A.U. The need for further research in these directions is evident.

There is yet another direction in which the need of further observation is great. Up to the present, different investigators have employed fields of different strengths and very few lines have been systematically studied in a field of gradually increasing strength simply because very intense fields are not easy to produce and very weak fields require the highest resolving power of the spectroscope for the detection of the small magnetic resolutions.

Satellites

It is a well-known fact, that some of the spectrum lines are very complex in structure (*cf.* mercury green line, found to be composed of a principal line and nine satellites). Hull, Nagaoka and Janicki have shown that satellites show a regular spacing, obey a definite relation as regards their distance from the principal line and are periodic in occurrence, indicating some sort of coupling of the electrons or the possible mutual action of vibrating electrons.

The observation of the Zeeman effect of these satellites has always been a fascinating study as likely to give a clue to the mechanism of radiation and the production of spectrum lines. Mercury lines being easily observed, have been investigated by more than one observer and recently Lunelund, Nagaoka and Takamine have carefully followed the whole course of the change in the lines from weak to strong magnetic fields and have shown that the separation of lines is not generally subject to the law of linear proportionality to the magnetic field (as expected from the simple theory of Lorentz) including the singular case in which change of wave length is proportional to the square of the magnetic field. The satellites gradually tend to oscillate to the branches of the principal line when the field is sufficiently increased. Erochin finds that the line H*a* of hydrogen behaves in a similar way.

Voigt, assuming a simple coupling with an electron, has shown mathematically that the change should take place at the first proportional to the square of the field and then according to a hyperbolic law. Nagaoka has discussed the possible origin of satellites in the light of the Zeeman and the Stark effects, and shows many of the results to be consistent with Voigt's theory of the vibrations of electrons in an isotropic, quasi-elastic electric field.

Houston's suggestion as to the origin of the satellites is an interesting one. He thinks that satellites may in some cases be caused by sudden changes of amplitude or phase in an oscillator of one definite period.

The writer employing a Wehnelt cathode lamp as the source of bright-fine arc lines in vacuum and using a powerful Echelon grating, observed Zeeman effect of the satellites of several lines of different elements in weak magnetic fields. Many curious results were observed, *e.g.* the disappearing of satellites, the appearance of new lines, the merging together of two lines into one, and finally, the departure of the magnetic separation from the law of linear proportionality. In some cases, notably with the six satellites of the bismuth blue line, a veritable 'dance' of lines in the magnetic field was observed. Nagaoka and Takamine are continuing their investigation of the satellites.

Apart from these anomalies, several satellites resolve into triplets, quadruplets, sixtuplets and follow Runge's rule.* The resolution of Cd $\lambda = 5{,}086$ has been observed and measured in a field of only 300 gauss.

Band Spectra.

The study of the magnetic resolution of band spectra is of great interest, because, at one time it was thought that unlike line spectra they are not of electronic origin. For a very long time, repeated investigations failed to show the evidence of the Zeeman effect in the case of individual lines of which the band spectra are formed. Dufour found that some of the bands were sensitive to the magnetic field. Fortrat has recently shown that the apparent absence of the Zeeman effect in band spectra was due to insufficient strength of the magnetic field employed, and that when a field of 40,000 or 50,000 gauss is employed, certain displacements are detected but there is no division and no polarisation. Deslandres and L. d'Azambuja have investigated the behaviour of water-vapour and nitrogen and have observed that while there was no sign of doubling of the rays, there was a decided displacement of all the lines. The latest work shows that the study of the action of magnetic fields permits band spectra to be divided into two classes—those which show the Zeeman effect and those which do not. Among the latter, all those which have been investigated up to the present time in intense fields have their lines slightly displaced by the field in a manner which varies from one series to another, but always in the same way for the same series. With regard to others, which show the Zeeman effect, identical separations are found for the heads of any particular series. These facts show that the distribution into series has a true physical significance.

Very recently Deslandres and Burson examined the spectrum of the blue cone of an oxycoalgas flame in magnetic field of varying strength and detected complicated phenomena. Separation into polarised components as in the ordinary Zeeman effect was observed, in addition to special displacements, and simplifications of the doublets similar to those described by Paschen and Back and Fortrat. F. Croze examining the lines and bands of the common gases comes to the conclusion that, given sufficiently intense field and sufficiently high dispersion, resolution should in all probability always be possible and that there is no criterion for the existence or non-existence of the Zeeman effect.

In the case of complex spectra like the second spectrum of hydrogen, a systematic study of the Zeeman effect has enabled the lines belonging to bands to be separated from those belonging to the line spectrum.

Stark thinks that the apparent absence of the Zeeman effect in band spectra is no objection to their electronic origin. It only means that the force maintaining the electron in its orbit is not directly proportional to the distance from the attracting centre. It is interesting to note that the band spectra of H and N showed little or no Stark effect. Later it was found that some of the lines are unaffected, others instead of being resolved into components are shifted either toward the red or toward the violet. This is in agreement with Dufour's measurement of the Zeeman effect.

Dissymmetries.

The position and intensities of the components of the normal triplet can be deduced very easily from the simple electronic theory of Lorentz.

Zeeman was the first to suggest and to observe that dissymmetries of the intensities of the components existed. Voigt, on theoretical grounds, predicted a different kind of dissymmetry to be noticed in weak fields only and not observable in strong fields.

Zeeman, Winawar, Risco, Koerner and others have observed several dissymmetries both in place as well as in intensity and in emission as well as in absorption lines. Some of them have been explained away as due to errors in the adjustment of the apparatus, pressure-variation in the source of light and observational errors. But there is no doubt that there are genuine dissymmetries which present many serious difficulties and compel us to modify the simple theory of Lorentz.

Paschen and Back and Voigt have tried to explain these dissymmetries by attributing them either to the coupling between electrons with different frequency or to a change in the structure of the radiating particles under the influence of the magnetic field. It is obvious that the real explanation cannot be furnished until the mechanism of radiation has been properly understood.

The observed facts point either to the complicated structure of the atom itself or to the complexity of structure of configurations of electrons circulating round a nucleus.

Complex Magnetic Resolutions.

It was found very soon after the discovery of the Zeeman effect that beside the normal triplet, there exist several complicated types of magnetic resolution and that the normal triplet is rather an exception than the rule. Lines were shown to split up into 4, 5, 6, 9 or even a score of components.

The value of e/m, deduced from the normal triplet by assuming Lorentz's theory, agreed well with the value found by independent methods, giving thereby the strongest support to the electronic origin of spectra. But the complex types gave confusing results and this chaotic state was reduced to order by the researches of a host of investigators led by Runge and Paschen, and it was shown that even the more complex cases exhibited certain relatively simple features. Preston found that all the lines of a given series and of homologous series of different elements are decomposed by the magnetic field in the same manner and, if drawn to the scale of the frequencies, the resolutions are identical. Runge stated that the complex magnetic resolutions are in simple relation with the normal value of e/m.

It may be mentioned here that the remarkable progress made in spectroscopy by the establishment of serial relations in spectrum lines by Balmer, Runge, Rydberg, Kayser, Paschen and Ritz and others has a very strong bearing on the magnetic resolution of lines.

We have seen how, independent of a spectrum formula, the magnetic resolutions prove that the lines of a series are grouped together. Any theory of complex magnetic resolution must first explain the emission of spectra and the series of spectral lines. Now the common limit and other numerical relations between the different series of the same element indicate that the different emission centres have some dynamic coupling and Rydberg's universal constant indicates a structural element common to all. The remarkable discovery of characteristic X-ray spectra photographed and investigated by Moseley and others showed that the principal lines in the spectra of a large number of elements were connected by a remarkably simple relation—a result also derivable from Bohr's Theory.

The Inverse Effect.

The Inverse effect, *i.e.* the magnetic resolution of absorption lines, is of great importance, firstly because it is easily intelligible and secondly because it has a direct application in astrophysics.

In this branch too Voigt has led the way, and as already hinted at, offered a theory consistent with observed facts. Zeeman's monograph gives all the important work done in this branch.

Hansen has recently carried out in Göttingen an elaborate investigation of the phenomena associated with the inverse Zeeman effect of the D-lines and the red Li-lines. He has studied the longitudinal, circular and the transversal linear double refraction with a magnetically dispersed absorption line and investigated the dependence of the phenomena on the field strength and the density of the vapour in the flame used. The results are in most cases in agreement with those of previous observers and confirm Voigt's theories. The discovery of the Zeeman effect in the sunspot spectra and the demonstration of the existence of solar magnetic fields, gave a special zest to the investigation of the Zeeman effect in directions inclined to the field and making an angle with it. Zeeman and Winawar carried out a systematic study of this phenomenon. Voigt and Scherer have recently studied the magneto-optical absorption in a Na-vapour with circularly polarised light in a direction very slightly inclined to the lines of force and observed the inverse effect of the D_1 and D_2 lines, thus extending the observations of Zeeman and Winawar.

It is remarkable to note the attention the D-lines have received from many investigators. Without exaggeration it may be said, that D-lines are the best studied of all the spectrum lines and most fruitful in their results.

Anomalous Zeeman Effect.

I have already referred to dissymmetries and shifts noticed by various observers. Here I refer to other anomalies of a different kind. Paschen and Back showed in 1912, that the lines of a very close series doublet or triplet influence each other in a very peculiar manner. When a sufficiently intense magnetic field is applied, a normal triplet is seen instead of an expected superposition of the types of separation of the separate lines. Such normal triplets in place of the expected complex types were observed in oxygen, hydrogen, sodium, lithium and other elements. Croze, Kent and the writer also observed similar simplification of lines in the magnetic-field.

Fortrat recently found that in weak magnetic fields sodium doublets are resolved into components according to Preston's rule, but in strong fields the several components give rise to normal triplet. He also showed that a large number of naturally multiple lines in the band spectra are simplified by the action of the magnetic field. It appears that both a doublet and a triplet behave in sufficiently strong fields as if formed of a simple line.

Paschen and Back suggest that the vibrations corresponding to simple lines, whose magnetic separations are all normal, are stable while the vibrations causing doublets or triplets, etc., are unstable and forced. The smaller the difference in frequency the greater the instability. The cause of the emission of the particular arrangement of lines is at the same time the cause of their abnormal magnetic separation. A strong magnetic field may, in the case of close lines, upset the equilibrium and change of type in the single line with the resulting normal separation.

Voigt has shown how the Lorentz's theory may be modified to represent the Zeeman effect of close triplets and doublets. He suggests the following substitute for Preston's law :—The characteristic line systems (simple line, doublets, etc.) of one and the same series or of similar series have similar and numerically equal parameters in the modified Lorentz equations corresponding to them. If the constituents of the system are separated by a considerably larger interval than the magnetic separation of the simple lines, the formulae giving the Zeeman effect follow Preston's law ; if, however, the interval is of the same order or smaller, the theory gives the deviations observed. Thus a normal triplet may come from a single line or from a very close doublet or triplet and appear where a complex magnetic type would be expected.

A highly interesting paper has recently been published by Becker on the complex Zeeman effect. Guided by his investigations on series spectra, Becker has been led to an explanation previously suggested by Preston, Drude and others.

His fundamental hypothesis is that the complex effect of a line giving more than three components is due to the complexity in the structure of the parent line, which is supposed to consist of a number of components of nearly equal frequency. Each of these gives rise to a Zeeman triplet of normal or nearly normal type. It is assumed that the number of components in the parent line equals the number of p-components, each of the latter being accompanied by two s-components Such a triplet is called a ' reduced triplet." The application of the hypothesis leads to the investigation of two propositions: (1) in any complex Zeeman effect the number of s-components is twice the number of p-components, (2) these Zeeman components may be arranged in symmetrical "reduced triplets," one for each p-component. of normal or nearly normal interval. Taking Voigt's scheme of complex types, it is found that eight of the twelve types satisfy both propositions ; two others satisfy the first ; another requires further experimental investigation and the remaining one affords an experimental test of the truth of the two propositions. This case is where a circularly right-handed polarised component falls on a circularly left-handed polarised component, such a double component should be unpolarised when viewed along the lines of force. This expectation was verified experimentally. Becker applies his hypothesis to iron and titanium spectra and gets very satisfactory results But he is unable to give any explanation for the unsymmetrical distribution of the intensities in the components of the reduced triplet, the separation of p-components and the abnormal Zeeman intervals, and above all, of the facts noticed by Paschen and Back and others

The Stark Effect.

It was in the autumn of 1913 that Stark observed the effect of an electric field on the resolution of spectrum lines, an effect analogous to the Zeeman effect, and found that lines are split up into a number of components, the number being different for different lines, even for those belonging to the same series. Stark observed from 18 to 28 components for the different hydrogen lines During the short time following the discovery of this effect, a large amount of data has been accumulated. Croze, Stark, Grabasso, Wood and others investigated combined Stark and Zeeman effects and have obtained valuable information. According to Voigt's theory, the simultaneous effects of the electric and magnetic fields on the electrons of Voigt's atom lead to the simple superposition of the Zeeman and the Stark effects. Garbasso has found this to be the case with H*a* lines of hydrogen.

The chief importance of the Stark effect like the Zeeman effect to which it is closely allied, lies in its furnishing new and most important information and criteria for constructing and judging any atomic models. Epstein has recently given a very successful theory of the Stark effect, based on Sommerfeld's work while Bohr's atomic model has yielded some interesting results.

Some Correlated Phenomena.

The discovery of solar magneto-optics by Hale has put into the hands of astronomers a very potent method of solar research. Stormer recently showed that while the Zeeman effect can be 'easily observed in the sun, there is no appreciable Stark effect. Deslandres explains the absence of the electric field by supposing that the sun's atmosphere is composed of different levels of opposite charges and that the Zeeman effect is perhaps due to galvanic and not to convection currents.

Humphreys and Mohler proved, about the same time as Zeeman made his great discovery, that under the influence of external pressure, many lines in the arc and spark spectrum are subjected to a slight pressure displacement. No close relation between this pressure-shift and the magnetic resolution has been detected but some relation has been suspected by various persons. The work of King, Duffield and others has been extended recently by T. Van Lohuizen who tries to find out a simple proportionality between the Zeeman effect and the pressure-shift. More observations are required before the comparison of the two effects can be carried out.

Various Theories.

The spectroscopists have always held that the real clue to the atomic structure will be furnished by the study of spectrum lines, and it is no exaggeration to say that every theory of atomic structure has received the greatest help from the facts of radiation. Our knowledge the real structure of the atoms and molecules is not quite complete, yet great progress has been made in the elucidation of some of the most elusive and complicated phenomena.

The discovery of the electron by J. J. Thomson was soon followed by the discovery of the Zeeman effect, which made it quite certain that light radiation is caused by the rapid vibrations of the electrons. Lorentz, whose pupil Zeeman was, put forward a simple theory to account for the observed facts Voigt starting from the inverse Zeeman effect modified and extended the theory of Lorentz and showed that magnetic rotation of the plane of polarisation, the Faraday effect, the magnetic double refraction and the ordinary resolution of lines are but different phases of the same phenomenon, one being the measure of the other. Voigt and his pupils, among whom the names of Drude and Ritz stand out so prominently, have carried out elaborate theoretical and experimental researches and have added vastly to our knowledge of magneto-optics. Ritz not only gave a brilliant theory of the origin of series in spectra, but explained their magnetic resolutions as well. According to him, the Zeeman effect is the result of the precessional motion of the Ritz oscillators round the direction of the external magnetic field.

Voigt has introduced into the Lorentz's equations terms expressing a resistance, a quasi-elastic force and by choosing suitable constants and allowing for the effect of the coupling of the electrons and by imagining the motion of the electrons to be constrained in various ways and by assuming different forms for the kinetic and potential energies of the electrons, developed a theory which explains most of the observed resolutions both normal and anomalous, simple and complex.

Enough has been said to show that magneto-optics proved a very fruitful means of attacking the problem of atomic structure and the various observations have helped in correlating disjointed facts, in giving a peep into the structure of the atom which proved to be highly complicated. Other methods of investigation were discovered and successfully employed by various workers in the field of science. The remarkable facts of radio-activity and especially the scattering of the α and β rays revealed many a hidden secret. The characteristic X-radiations opened up several fresh avenues of approach and the photo-electric effect, the Doppler effect for the canal-rays and the recently discovered Stark effect have supplied most ingenious and useful weapons of attack. New theories of radiation were found necessary, as the old Newtonian mechanics had no place for the Quantum hypothesis requiring a belief in the discontinuous nature of energy

The latest successful attempt is by Bohr who, starting from the nucleus atom of Rutherford and making use of Planck's Quantum hypothesis has given an atomic model which has proved a tremendous success.

Bohr, Sommerfeld, Herzenfeld, and Schwarzchild and Debye have recently demonstrated that by the combination of the Quantum hypothesis with Bohr's atomic model, an explanation of the electric and magnetic effects can be given, but the problem is an intricate one, since there are several ways of applying the theory and each of them leads to a different result. No attempt appears to have been made to explain the various complicated and anomalous types on this modified theory. But it is worth noting that, as pointed out by Debye, in assuming Bohr's equations and the Quantum hypothesis, there is no place left for the quasi-elastic oscillating electrons which function as energy sources for the series lines, although used in all theories for the explanation of the Zeeman effect from Lorentz to Voigt.

Conclusion.

Thus in tracing the recent progess in a single branch of physics, we see how the various mysteries are gradually being solved and how knowledge advances by slow steps. The various anomalies and complexities defy our attempts but do not lessen our confidence in the ultimate success of our pursuit. Science believes in Tyndall's cry of "Commotion before stagnation, the leap of the torrent before the stillness of the swamp"—and makes and unmakes theories every day to explain the observed facts and to predict results never observed before. And in catching a glimpse of the sub-atomic world through the window thrown open by the study of magneto-optics, we realize the truth of the saying of Seneca :—

"Nature does not allow us to explore her sanctuaries all at once. We think we are initiated but we are still only on the threshold."

On the displacement of the lines in the Solar spectrum towards the red.—*By* J. EVERSHED.

1. The want of exact coincidence between the lines in solar and terrestrial spectra was first observed by Rowland, and this was later explained as due to a pressure in the reversing layer of about six atmospheres.

2. Researches at Kodaikanal have shown that the pressure in the reversing layer cannot exceed, and is probably less than, one atmosphere; also that the displacement of the lines is probably due to a descending motion of the gases amounting to about 0·5 to 1 kilometer per second.

3. When light from different parts of the sun's disc is examined, it is found that the wave-lengths of the lines progressively increase from the centre of the disc to any point on the limb, where the displacement compared with the lines in terrestrial spectra is greatest. This increase of displacement at the limb has also been attributed to pressure differences; but the Kodaikanal researches prove that this is not a pressure effect,

4. Interpreting the shifts, both at the limb and at the centre of the disc, as due to motion only, the difficulty has to be faced that it involves a repulsion of the solar gases by the Earth,

5. Other possible causes of line shifts are (*a*) anomalous dispersion, (*b*) gravitational effect resulting from Einstein's theory of relativity.

Anomalous dispersion has been shown to be ineffective in displacing solar lines, but "relativity effect" may be operative. Dr. Gilbert Walker has shown that by assuming a constant relativity shift, combined with a motion shift in the opposite sense and varying as the cosine of the angular distance from the centre of the disc, a close approximation to the observed shifts between centre and limb may be deduced.

6. The combination of relativity and ascending motion does not give a complete explanation of the phenomena, as there are large outstanding shifts at the limb which cannot be due to relativity alone. These large

shifts for certain lines are readily explained on the hypothesis of a general recessive motion of the solar gases; but this implies an Earth effect.

7. Evidence is being sought which will either verify or disprove an Earth effect. This can be obtained by observing the wave lengths of the lines in the spectrum of Venus when the planet is reflecting light from the hidden face of the Sun; and it is hoped eventually to secure data which will show which of the two hypotheses is false.

Improved formulae and methods for Fabry and Perot's interferometer.—*By* T. ROYDS.

The formulae previously published involve the determination of the quantities, the focal length of the objective used to focus the interference rings on the slit of the auxiliary spectograph, and the magnification of the spectograph, in addition to measuring the diameters of the rings. By a simple transformation, however, these two quantities can be eliminated.

A formula suitable for the measurement of small changes of wave length is given.

A simple method of adjusting the interferometer is suggested but its sensitiveness has not yet been thoroughly tested.

On the use of Ritz's method for finding the vibration frequencies of *heterogeneous* strings and membranes.—*By* N. K. MAJUMDAR.

The object of the writer is to show how reliable results about the vibration-frequencies of *heterogeneous* strings and membranes can be obtained by the use of a method, the germs of which are found in Lord Rayleigh's writings, and which was first clearly expounded by Ritz.

It is believed that no previous writer has applied this method to determine the vibration-frequencies of heterogeneous strings and membranes, although the method has found applications to numerous other problems by many investigators, including Ritz himself, who considered the vibration of plates, Prof. A. E. H. Love, who studied the theory of tides, Prof. Kalahne and Dr. Reinstein.

On the use and effect of sealing-wax in the construction of the window of a vacuum tube, in which cathode rays are produced by a series of high tension electric discharges. —*By* S. S. NEHRU.

The note summarises the experience gained in the construction of the so-called "window" or Lenard Tubes. Both as regards insulation and vacuum the indiscriminate use of sealing-wax is open to objection. In effect, its insulating power falls off considerably if the exposed surface is not fresh or has darkened under the influence of high tension electric discharges. Picene is an altogether more satisfactory agent both for insulation and vacuum, and has come to replace sealing-wax in the construction of the window which is provided for the egress of cathode rays from the vacuum tube, in which they are formed.

A photographic method for the determination of the ranges of *a* particles expelled from radio-active products.—*By* R. SAHNI.

The range of *a* particles is one of the most important characteristic constants of the radio-active products from which they are expelled, more specially so in view of the close quantitative relation which Geiger and Nuttall have found to exist between the ranges and the transformation constants of the parent substances. Hitherto the ranges of α particles have been determined by various workers by an electrical or a scintillation method. In the method described in the present paper, a cut piece of Wratten and Wainwright lantern plate is fixed in a suitable holder at one end of a metallic air-chamber, while α particles are allowed to enter the chamber at the opposite end through a mica window and fall perpendicularly upon the sensitive film. The chamber is placed in a powerful magnetic field to deflect away the α rays. It communicates with a pump, drying tubes and a manometer. By a series of experiments, the critical pressure within the air-chamber at which the impression on the sensitive plate is just produced, or just fails to be produced, is determined. Only preliminary experiments have so far been carried out, but these show clearly that the ranges are a few millimeters longer than the values already assigned to them. The following advantages are claimed for the photographic method :—

1. It is more objective and less subjective than any of the other methods.
2. The record is permanent.
3. The results are cumulative.

Electric discharge through hydrogen and helium, Pt. I, Hydrogen.—*By* D. N. MALLIK *and* A. B. DAS.

In a paper in the Philosophical Transactions for June 1907, Prof. M. A. Wilson and Mr. Martyr described the behaviour of hydrogen contained in a vacuum tube of de la Rive's pattern. They found that it was difficult to obtain rotation of the electric discharge in such a tube (produced by storage cells) although when the contained gas was air or N_2O, the phenomenon was well defined and capable of quantitative measurement. Some years ago, while working with an induction coil as well as storage cells, I was unable to obtain any rotation at all. I was then disposed to regard this as an illustration of the general erratic behaviour of electric discharge through hydrogen which many physicists had previously studied.

On repeating the experiment with tubes of various lengths and induction coils of various E.M.Fs., I found that the rotatory phenomenon is observable in hydrogen, as *in other gases*, but the conditions have to be carefully adjusted for the purpose.

The object of the present paper is to investigate these conditions and to inquire if these can be explained on theoretical grounds.

The theoretical significance of this law is noteworthy, and is also discussed.

On a new method of solving boundary value problems in mathematical physics in which the boundary is an ellipsoid.—*By* BIBHUTI BHUSAN DATTA.

The first writer to attempt with any success a problem involving an ellipsoid of three unequal axes as the boundary, was E. Mathieu [1] who showed how the problem could be reduced to the solution of certain ordinary linear differential equations. But he found these equations to be so unmanageable that he contented himself with approximating to their solutions for the special case of an ellipsoid of revolution. Prof. C. Niven improved upon the results of Mathieu in certain respects in an interesting memoir[1] entitled, "On the conduction of heat in an ellipsoid of revolution."

---

[1] *Cours de physique mathématique*, ch. IX.

I have developed a new method of solving problems of mathematical physics with ellipsoids as boundaries. Recently I have used it for the determination of the non-stationary state of heat in an ellipsoid[2] For the simpler case of an ellipsoid of revolution, the results obtained by my method agree with those obtained by the methods of Mathieu and Niven, with this exception that I point out a mistake in Prof. Niven's memoir.

Further I have obtained some results for (1) the electrical oscillations on an ellipsoidal conductor, and (2) the disturbance produced when plain waves of sound impinge upon an ellipsoidal obstacle

On the stability of pillars in earth.—*By* CAPT. E. P. HARRISON.

An investigation into the stability of posts embedded in concrete blocks such as are frequently employed in the construction of temporary buildings. The problem is attacked mathematically by giving a small general displacement to a concrete block buried in earth. Earth resistance is assumed to follow the law $R=kd$, where R is the intensity of the pressure on the block due to earth resistance and d is the linear displacement of the block surface. This law is supported by experiment whence the constant k is calculated. Finally a curve is given by means of which the size of a concrete block necessary for the foundation of any post is obtained.

The hydrodynamical solution for viscous flow in a channel of infinite depth and sides inclined at an angle of 60^0 to the horizon.—*By* S. M. JACOB.

Elastic Solids under body Forces.—*By* D. N. MALLIK.

Section of Chemistry.

President—DR. GILBERT J. FOWLER, *F.I.C., Professor of Applied Chemistry, Indian Institute of Science, Bangalore.*

[THE PRESIDENTIAL ADDRESS, "The Training of Students in Applied Chemistry," has been published *in extenso*, in the *Journal of the Indian Institute of Science*, Vol. II, No. I.]

Additive compounds of amines and phenols with poly-nitronaphthalenes.—*By* J. J. SUDBOROUGH.

Most of the known tri- and tetra-nitro-naphthalenes yield coloured additive compounds with arylamines, phenols and phenolic ethers. The readiness with which the compounds are formed and other relative stabilities vary considerably with the nitro-derivatives. α—Trinitronaphthalene (1 : 3 : 5) and α- and β-tetra-nitro-naphthalenes (1 : 3 : 5 : 7 and 1 : 3 : 6 : 8) yield additive compounds most readily. No compounds have so far been obtained from δ tetra-nitro-naphthalene (1 : 2 : 5 : 8)

It has not been found possible to prepare δ-tri-nitro-naphthalene.

---

[1] *Phil. Trans.*, Vol. 171 (1880).

[2] "On the non-stationary state of heat in an ellipsoid," *Bulletin of the Calcutta Mathematical Society*, Vol. 8.

Studies in substituted quaternary azonium compounds containing an asymmetric nitrogen atom, Part III.—*By* B. K. Singh.

The work described in this paper is a continuation of that already published.

Phenylmethylethylazonium iodide was resolved with the aid of silver salt of Armstrong and Lowry's bromocamphorsulphonic acid.

Phenylpropylbenzylazonium iodide was resolved with the aid of silver salts of Reychler's camphorsulphonic and Armstrong and Lowry's bromocamphorsulphonic acids. In the case of the camphorsulphonates, both dB dA and lB dA salts have been obtained in a pure condition.

It is also found in the case of the camphorsulphonates, that the two salts form solid solutions one in the other, when their composition corresponds to 46 per cent dB dA and 54 per cent lB dA component.

Phenylallylbenzylazonium iodide was resolved with the aid of silver salt of d-camphor-β-sulphonic acid.

The effect of constitution on the optical rotatory power of these nitrogen bases is discussed. It is found that Guye's expression connecting mass and rotatory power does not hold, but further judgment is reserved till more work in this series, which is in progress, is completed.

Metallic derivatives of alkaloids, Part II.—*By* J. N. Rakshit.

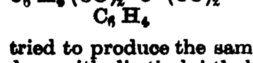
Potassium narcotine, sodium cotarnine, potassium cotarnine were prepared by boiling the alkaloids with the metals in benzene; sodium morphinate and potassium morphinate were prepared by the interaction of the hydrates of the metals with the alkaloid in alcohol and water respectively, and attempts have been made to prepare metallic derivatives of quinine and caffeine, but were unsuccessful.

Synthesis of substances related to carminic acid.—*By* A. N. Meldrum.

The author is continuing his work on the synthesis of substances related to cochenillic and carminic acids. He is attempting to prepare substances which have the carbon skeleton required by Liebermann and Voswinckel's suggested constitution for carminic acid.

Diketohydrindene, Part III.—*By* A Das *and* B. N. Ghosh.

With the idea of synthesising a compound of this type the authors tried the condensation of diketohydrindene with phthalic anhydride, but unfortunately the reaction did not proceed in the way expected.



$$C_6H_4(CO)_2\cdot \underset{C_6H_4}{C}\cdot(CO)_2\cdot$$

They tried to produce the same compound by the condensation of diketohydrindene with di-ethylphthalate, but here also the reaction gave a compound different from the one expected and identical with benzoyl αγ-diketohydrindene, obtained by Schwerin from ethylphthalate and acetophenone.

The authors tried in this paper the condensations of (1) phthalic, (2) benzoic, (3) succinic anhydrides, these three anhydrides being chosen to represent the closed chain aromatic anhydride, open chain aromatic anhydride and closed chain aliphatic anhydride respectively. The substances obtained are complex in nature They resemble one another in their appearance, but differ in their physical and chemical properties.

In this paper they have also just mentioned a compound obtained by the oxidation of diketohydrindene, which is probably of the following constitution :—

$$C_6H_4(CO)_2\cdot CH—CH—(CO)_2\cdot C_6H_4$$

Synthesis of pyranole derivatives.—*By* S. C. Chatterji *and* B. N. Ghosh.

It has been shown that pyranole derivatives can be prepared by the condensation of aromatic o-hydroxyaldehydes with substances containing the $C.O.C.H_2.C.O$-group. To prove that the reaction is a general one the authors have studied the condensation of benzoyl-acetone and acetyl-acetone with salicylic aldehyde. It is interesting to note that from benzoyl-acetone and salicyl aldehyde three distinct substances, two of which are isomeric, have been isolated; acetyl acetone and salicylic aldehyde yielding two products. The paper deals in addition with the methods of preparation of a number of derivatives of these condensation products, as also an easy and modified process for the preparation of benzoyl acetone. A full discussion of the number of possible isomerides has been given in the paper.

Morindone.—*By* J. L. Simonsen.

The author describes experiments which have been made with the object of determining the constitution of morindone. He shows that morindone is probably either a hydroxy methyl chrysazin or a hydroxy methyl anthrarufin.

The nitration of 2 and 6 methoxy-m-tolualdehydes and m-toluic acids.—*By* J. L. Simonsen.

With the object of synthesising 4-methyl 3-methoxy-o-phthalic acid, the author nitrated 2-methoxy-m-tolualdehyde and 2-methoxy-m-toluic acid in the expectation that the nitro group would enter ortho to the aldehyde or carboxyl groups. This expectation was not realized, 5-nitro-2-methoxy-m-tolualdehyde and 5-nitro-2-methoxy-m-toluic acid being obtained. The nitration of the 6-methoxy aldehyde and acid was also investigated.

The electrolytic preparation of white lead.—*By* H. E. Watson.

An examination has been made of the practical utility of the different patents for the electrolytic preparation of white lead. It has been found that the majority of them are not workable Further investigations are being carried out in the cases of methods which yield satisfactory results from a chemical point of view, to ascertain whether the manufacture of white lead by their means might prove financially successful in India, in view of the high price of acetic acid which is required by nearly all other processes.

Burmese lead is also being examined with a view to ascertaining its suitability for making white lead.

The production of acetic acid from alcohol.—*By* F. L. Usher *and* R. Venkateswaran.

The object of the work was to find a cheap and efficient way of converting ethyl alcohol into acetic acid. Three methods were examined: (1) electrolytic oxidation, (2) oxidation by chromic acid, and (3) oxidation by air. The first method was found to be without practical value, whereas the second offers certain advantages, since the only recurrent expense is that of the electrical energy used. The method consists in oxidising the alcohol by means of a hot concentrated solution of chromic and sulphuric acids, distilling off the acetic acid formed, and regenerating the chromic acid electrolytically.

The third method examined is that of passing alcohol vapour mixed with excess of air over a suitable catalyst at a temperature between 200° and 250°. There is evidence that a good yield of aldehyde is obtained in this way, and the experiments are being continued with the object of converting this into acid. Details of conditions and yields are given in the paper.

The evolution of elements —*By* S. S. SAHNI.

The preliminary growth of elements from the protyle mass proceeded by the mutational process of heterogenation. The mother elements being formed in this way, they gave rise to a series of daughter products or variations in accordance with polarity—the slower the change the more electropositive the elements and *vice versa*. This change has in due time given rise to unstable heavy substances, *viz.* the radioactive substances. Their disintegration does not give rise to allied products or variations, but mutations, elements belonging to different groups of the periodic table. It would seem that preliminary stages of evolution and the radioactive process of decay are identical. In both the valency difference of one connotes a difference of one β electron, whereas a valency difference of two and a corresponding difference of four in the atomic weight means a difference of one He atom in the nucleus content of the two elements. The intermediate stage of evolution has given rise to a series of allied products in which every mother element differs from its allied products by n He (n greater than 4). Their presence or absence in the sun and other stars can best be explained by the polarity relation.

Two-cylinder models of the periodic system.—*By* A. N. MELDRUM.

The periodic system of the elements can be inscribed on the surfaces of two cylinders which stand side by side and touch one another. This was first done by Crookes. The number of modifications of the periodic system is legion and it is impracticable to construct a two-cylinder model for each. It is possible to make a plane diagram which represents the "development" of the cylindrical surfaces and in this way any two-cylinder arrangement can easily be studied and be compared with any other. Soddy's scheme leads almost automatically (1) to a division of the elements into two sets which are not the same as the "odd" and "even" series of Mendeleeff, and (2) to families of the elements which are precisely the same as those of Lothar Meyer.

The influence of ammonium chloride, sodium chloride, and lithium chloride on the solubility of aniline in water.—*By* B. H. WILSDON, R. R. KHANNA, D. R. KAPUR *and* H. D. SONEJA.

1. Measurements of the solubility of aniline in water containing varying concentrations of the above salts are described.
2. The results so obtained have been compared with those obtained by Philip and others with different solvents.
3. It is found that the equivalent relative lowering of solvent power of the water decreases less rapidly with rising concentration of added salt than has been observed in other cases.
4. It is suggested that this behaviour is to be explained by the assumption of some form of combination between the aniline and added salt, which becomes more marked in strong solutions.
5. It is pointed out that a similar assumption made by Philip and Bramley to account for divergent values obtained for the equivalent

lowering of solvent power in certain cases is open to objection, as the curves are found to run parallel with those assumed to be normal, whereas increasing divergence should be expected with rising concentration as is observed in the case of aniline.

The conductivities, viscosities and densities of saturated and supersaturated solutions of sodium nitrate and their variation with the temperature.—*By* B. H. WILSDON, MUZAFFAR-UD-DIN *and* S. ALI KHAN.

1. Measurements are described of the density, viscosity and conductivity of solutions of sodium nitrate.

2. It is shown that the curves obtained by plotting the "intrinsic conductivity," *i.e.* the product of the relative viscosity and the molecular conductivity, against the concentration, exhibit well marked minima.

3. No considerable change is observable in the temperature coefficient of intrinsic conductivity at these concentrations (approximately 40-50 per cent $NaNO_3$).

4. It is pointed out that since "autolytic" conductivity as exhibited by fused salts has generally a much smaller temperature coefficient than ordinary or "heterolytic" conductivity, the hypothesis put forward by Bousfield and Lowry in which the increase of conductivity shown by concentrated solutions is attributed to the former of the two types, is not supported by experiment.

5. Reasons are put forward for supposing that the observed increase in intrinsic conductivity represents a real increase in mobility of the ions concerned, and is not due to overcorrection for the viscosity effect as is supposed by Washburn and others.

The Oleo-Resins from Hardwickia Pinnata and Dipterocarpus Indicus.—*By* J. J. SUDBOROUGH, K. SITARAM IYER *and* J. C. MANSUKHANI.

Both oleo-resins when distilled in steam yield an essential oil and a resin. The essential oil in each case consists of sesquiterpenes together with a small amount of an alcoholic substance.

The chief hydrocarbon constituent of both essential oils appears to be α Caryophyllene, identical with that obtained from the oil of clove-stems. β-Caryophyllene and cadinene could not be detected. The oil appears to be a good substitute for Copaiba oil.

The resins differ in properties, that from the Hardwickia has a low melting point and does not coagulate when heated, whereas that from Dipterocarpus coagulates and in this respect resembles the resin from ordinary Gurjun balsam. According to Deussen and Philipp the essential oil from Gurjun balsam (mainly derived from D. turbinatus and D. Laevis) does not contain caryophyllene, but two isomeric hydrocarbons α and β-Gurjunene.

Good oil varnishes have been prepared from the solid resins from both types of oleo-resins.

Note on the hydrolysis of certain Indian oils by castor lipase.—*By* K. G. LATWALA.

A series of experiments has been made on the rate of decomposition of cotton seed, ground nut, castor and hongay oils by means of castor seed ferment in the usual way. The results indicate that all the oils are fairly readily hydrolysed at the ordinary temperature using a suitable amount of the crushed seed in the presence of dilute acetic acid and keeping the mixture well emulsified. In most cases 80·90 per cent of the oil is hydrolysed within 48·96 hours. The results obtained also confirm the conclusion drawn by others that the seeds when germinated are less efficient than when resting.

Safflower oil as a drying oil.—*By* H. H. MANN *and* N. V. KANTIKAR.

The safflower seed has peculiar importance as being capable of growing on much dry upland capable of growing little else. The seeds contain on the average 50·8 per cent of husk and 49·2 per cent of highly oily kernel, while the seed, as a whole, contains from 25·4 to 36·9 per cent of oil from analyses of a large number of Indian samples. The kernel contains from 49·5 to 54·05 per cent of oil.

Fresh samples of oil gave constants as follows:—Specific gravity at 26°C.—0·914; Butyro-refractometer reading at 40°C.—63·64; Reichert-Meissl number—0·2 to 0·5; Saponification value—177 to 203; Acid value —0·6 to 2·6; Iodine value—111 to 122; Hehner value—94·8; Maumene test —85°C. to 94°C. The mean molecular weight of the fatty acids was 294. Stearic acid was only present in traces, palmitic acid being the chief saturated acid present.

The oil was heated at 100°C., 186°C., and 300°C. for varying times in carbon dioxide and in oxygen. In most directions the results of heating in carbon dioxide and in oxygen are similar. In neither case is there much change in the constants of the oil by heating at 100°C, or at 186°C. At 300°C. the colour becomes much darker in oxygen than in carbon dioxide. In both cases the specific gravity and refraction rapidly increase and there is also a great increase in the acidity, which afterwards disappears, probably owing to volatilisation of the volatile acids produced. The Iodine value goes down till it is less than half its original value. But the most striking feature is the increase in viscosity. This is much more marked in oxygen than in carbon dioxide. After two hours' heating at 300°C. in oxygen, the viscosity, in fact, increases very rapidly till the oil becomes almost a semi-solid mass,—the *roghan* of the Indian bazaars. From the substantial identity of the results of heating safflower oil in carbon dioxide and in oxygen we are entitled to conclude that the change in safflower oil on heating is largely in the nature of decomposition, with some polymerisation, and is only to a minor extent due to oxidation.

The oxygen absorbed by the oil heated to 100°C. and 186°C. amounts to 7 to 10 per cent when mixed with litharge and kept at a temperature of 32 to 34°C. This capacity to absorb oxygen is only very slightly affected by heating to these temperatures.

The time required for drying by the oils heated in carbon dioxide when mixed with manganese borate and spread in thin layers is slightly less than for the raw safflower oil at the lower temperature, but at 300°C. the speed of drying is reduced. When the oil has been heated in oxygen a slight increase in drying power takes place at 100°C. and a larger amount at 186°C., the rapidity of drying being, in the latter case, twice as great as with the unboiled oil. On heating to 300°C. in oxygen, a slight increase in drying capacity is noticed at first, but if the heating is long continued, the oil loses its drying power to approximately the same extent as the oil heated in carbon dioxide.

Similar experiments, without a drier, with a paint prepared with the oil and white lead only, gave somewhat different results, and it was found that in this case the heating of the oil practically decreased the drying capacity when the heating was done in oxygen. What the cause of this difference was, cannot at present be stated, but it may account for anomalies in the use of safflower oil as a drying oil which have hitherto been unexplained. In the meantime, it was noticed that white lead paints prepared from all grades of safflower oil gave a peculiar glossy surface when spread on wood,—and one equally hard as boiled linseed oil.

The use of a mixture of linseed oil and safflower oil for heating gave boiled oils which appear to possess no advantage over safflower oil alone.

The work is being continued.

Chemical studies on safflower seed and its germination.—*By* V. A. TAMHANE.

The germination of oily seeds has been very little studied, and what has been done has been chiefly or almost entirely on the castor seed. Th safflower seed has a special interest, however, in India.

Safflower seed in the resting condition has the following composition, after complete drying. Oil,—56 to 58%; Proteids,—29 to 32 %; Woody Fibre,—1 to 2%; Nitrogen-free extract,—7 to 10%; Ash,—3 to 4%. It contains no starch, tannin, or glucoside, but contains a small quantity of a non-reducing sugar which is still under investigation.

The process of germination was followed, under sterile conditions, from stage to stage, and it is shown that (1) there is a gradual decrease in the oil content, (2) a gradual increase in the nitrogen-free extract especially in the sugars, (3) a gradual but slight loss in total proteids, while the proportion of soluble proteids increases rapidly. These changes reach a maximum when the radical has grown fully, but just before lateral roots begin to develop.

The lipase of germinating safflower seed was studied, first by Green's method (which gave unsatisfactory results) and then by Armstrong's method which was much more satisfactory. In the latter method the germinated seed was dried and extracted with ether at the room temperature, the residue freed from ether by standing in the air, and the enzyme in the residue determined by allowing it to act on the oil mixed with a little gum arabic. The quantity was measured by the acidity developed. Using this method, and also that of Tanaka, it was found that the amount of lipase in the resting seed was very small indeed, but during germination it rapidly increased, reaching a maximum just before lateral roots begin to develop, after which it declined.

A more thorough study of the oxidases of the germinating seed was made by a modification of Bunzel's method. Their presence in the germinated seed was already indicated by the guaiacum test. In this case it was shown that there is no oxidase in the resting seed, but it appears at once on the commencement of germination, and increases in amount again until the lateral roots begin to develop after which it declines, if no plant food is supplied to the seedling.

The work is being continued.

Oxidases. With special reference to their presence and function in the sugarcane.—*By* R. NARAIN.

The author shows that the oxidases or the so-called oxidising enzymes are present in all the different portions of the sugarcane plant. Their function seems to be to regulate the photo-synthetical processes of the cane leaf and to protect the cane from the attacks of fungoid diseases to which it is liable, specially in its lower portions. The browning of the extract or of the cut surfaces of the cane is due to the oxidation of a chromogen of the nature of pyrogallic acid, through the agency of the cane oxidases. Miss Wheldale has shown that the power of directly blueing guaiacum is associated with the presence of pyrocatechin in the plant. This view is criticised and its deficiency pointed out. Chloroform is shown to exercise the best preservative and antiseptic action. As to the effect of media, it has been found that although alkaline media accelerate the oxidase reaction within very narrow limits, considering all the factors of the plant economy the original acid contents of the cell sap is by far the best calculated to further its growth and that the plant has within itself the means of regulating this acid value to meet its daily requirements. It is shown that heating the oxidase extract does not result in its permanent destruction, as has been commonly held so far, but only its temporary inhibition. Similarly the effect of reducing agents is simply to suspend the oxidase activity for a time and never to destroy it irrecoverably. Finally it has been shown that the starch and potassium iodide reaction is a true reaction for oxidases and the cane oxidases are not truly enzymic in character.

Effect of storage on some tanning materials.—*By* P. SINGH.

This paper embodies the results of tannin analysis of a number of tanning materials kept under observation for some years, showing that there is practically no deterioration in the tannin content of the materials examined, due to the effects of mere storage.

Factors for the estimation of gluten and a few suggestions concerning the analysis of Ata and Flour.—*By* B. SASTRI.

1. A time-saving method for the estimation of dry gluten from the damp mass.
2. Tables showing results of analysis.
3. Standards for the percentages of moisture and ash can be conveniently raised.
4. Foreign starches and physical characteristics.

The investigation of a water-proofing solution used in the manufacture of surgical limb-baths and of other matters connected with the process.—*By* H. B. DUNNICLIFF.

The work was undertaken to investigate the causes of, and to suggest remedies for certain defects which appeared in the finished limb-baths made from paper, starch and a water-proofing solution

Rough prescriptions for the paste and the water-proofing solution were given and these were standardised.

It is shown that samples of commercial "copper carbonate" vary largely in composition (52% CU to 67% CU). It is suggested that the cuprammonium solution be made by precipitating a known amount of copper sulphate with sodium carbonate, washing the precipitate by decantation and then dissolving it in ammonia solution. A table is given showing the degree of dilution required for ammonia solutions of different specific gravities. Cotton wool is dissolved in this to make the water-proofing solution. The solution should be allowed to stand for two days with intermittent shaking.

The paper used should contain sufficient "soluble cellulose" to make the fastening of paper by it a process of welding.

Samples of bazar cotton from many sources have been tried, but all of them leave a residue and none is sufficiently soluble for the porpose. Prepared absorbent cotton wools were used in this work.

Exact directions for the preparation of the water-proofing solution, etc., from bazar materials are given.

To test the efficiency of the solutions, eleven solutions of different strengths were prepared No. 8 was finally selected. Samples of cardboard, made from the papers supplied, were treated and polished with the various solutions.. After drying, the samples were put into boiling water and left in the water for twenty-four hours. The sample should retain its polish and be unblistered by this test.

Samples of the work in all its stages were exhibited by the author and the possible sources of error explained. A new process is now being developed in collaboration with Mr. L. Heath, Principal of the Mayo School of Art, Lahore, which is cheaper and which involves less labour. The vessels made are not restricted as to shape as is the case with those made by the original process. Samples of the new process were also exhibited.

Coumarpyridines.—*By* B. B. Dey *and* M. N. Goswami.

Photographic effect produced by woods exposed to active rays and its cause.— *By* P. Neogi.

Section of Zoology and Ethnography.

President—B. L. Chaudhuri, *B.A.*, *D.Sc.*, *F.R.S.E.*, *Assistant Superintendent, Zoological Survey of India.*

Presidential Address.

Gentlemen,—very much honoured as I feel for being selected to preside over the Section of Zoology and Ethnography in the present session of the Congress, I firmly believe that some one more able and better qualified to guide and supervise your deliberations and discussions should have been chosen for the task.

We must congratulate ourselves on the excellent quality of most of the papers promised in this section. Both in number, in wealth and in the variety of subjects in Zoology nothing is left to be desired. If we cannot lay similar claims for the branch of Ethnography the causes will not be far to seek. We have this most comprehensive branch of the science of Biology still attached to the section of Zoology. To have inaugurated a separate section for Ethnography at this Lahore Meeting would have been fitting, for it was in this town that the first Ethnographic Conference in India was held in the month of March, 1885, at the instance of Sir Denzil Ibbetson, whose many-sided activities were referred to in the Presidential address. If a separate section of Ethnography or Anthropology be instituted we have reason to expect a much larger attendance from the extensive body of earnest and devoted workers in this subject.

Gentlemen, no one regrets more than myself that I should be standing here between you and the reading of the interesting papers on our programme. I am therefore anxious to be very brief in what I have to say.

As a humble student of Ichthyology I am rejoiced at the interest and earnestness that is being evinced in this branch of Zoology in almost all the provinces of India at the present time, either in connection with fisheries or with reference to the share of fish in the prevention of the spread of Malaria. In recent years from this Province of Punjab alone the Department of the Zoological Survey of India has received a very large number of fishes for identification, some of which are believed to be new to science For most of these we are indebted to Mr. G. C. L. Howell. We regret his absence to-day and the circumstances that have taken him away from the pursuit of his choice. We are glad to notice the spirit of healthy co-operation that exists between the Zoological Survey of India on one hand and the provincial Fisheries on the other. It is perhaps not too much to hope that the Zoological Survey will become a central station for zoological work in India where scientific workers will have access to all important literature and collections of typical specimens, without the examination and consultation of which no biological work can anywhere make headway. It may not be altogether uninteresting or unprofitable for the scattered workers all over the continent of India to listen to or glance through, as a preliminary step, a list of works on Ichthyology, however trite and imperfect it be, that have reference to the fishes of India.

Regarding the economic value of fish Linnaeus once said :—"So great is the importance of fish to the enjoyment of the rich and the necessities of the poor, that man might with less inconvenience, give up the whole class of birds and many of the mammalia than be deprived of the finny tribes." Though men of science carry on their investigation regardless of any utilitarian point of view, the people in general are always anxious to find what practical use the world can make of the results of these investigations; it therefore may not be unreasonable to expect that even a layman may find some interest in a brief review of the history of our knowledge of Indian fish.

I do not want to tell you anything to-day about the number of species of fish enumerated or referred in the Indian Medical work *Susrut* or other ancient Sanskrit or Pali texts, nor will I mention those names which are inscribed in the edicts of the good King Asoka, because the importance of these enumerations is purely historical and the records do not actually lead us towards the advancement of our knowledge of Indian Ichthyology.

The study of Indian Ichthyology demands rather extensive knowledge of fish-literature. The relations of the fishes of India are almost world-wide. The fishes of India, on one side, are related to those of Central and Western Asia as well as Africa, and, on the other hand, to those of the Malay Peninsula, Australia, Malay Archipelago, the Philippines, China, Japan and Korea. There is at least one freshwater genus which is also found as far away as South America. Many of the marine fishes of the coasts and the estuaries of India are found in the

Pacific and the Atlantic Oceans, not to mention the Red Sea and the Mediterranean.

In the systematic study of fishes we have mainly two classes of workers: explorers and compilers, as the result of whose activities we have (1) universal catalogues, (2) works on special groups (monographs), and (3) works on local faunas —besides these we have also to take into account the results of the investigation of particular branches of Ichthyology, such as on morphology, embryology, distribution in space and time, etc., etc.

From what we have already said it is clear that the study of the works of Belon, Willougby, Ray and Linnaeus are as much necessary for the study of Indian Ichthyology as those of Russell, Buchanan Hamilton, Day and Alcock, and in the list that I am going to lay before you I shall endeavour to include the main works on Ichthyology which have to be consulted in order to understand properly the true relationship of the Indian fishes either direct or remote.

It has been truly said that the commencement of the history of Ichthyology coincides with that of Zoology. One can travel back to Aristotle (384--322 B.C.) for a scientific appreciation of the true definition of fish—nor was he less interested in distinguishing between facts and fables of the mysterious East. The number of fishes, known personally to Aristotle, seems to have been about 115, all of which are, however, inhabitants of the Aegean Sea,

In 1553 Pierre Belon (1518—64) published his octavo volume of 448 pages entitled *De Aquatilibus* in which 110 species of the Mediterranean Sea were described with tolerable figures and with a creditable attempt at classification. In 1554 G. Rondelet (1507—57) published his *De Piscibus Marinis* in which 244 different species of fish chiefly from the Mediterranean were described with woodcut illustrations. The basis of classification, however, was first established by John Ray (1628—1705) and Francis Willoughby (1635—72). The *Historia Piscium* published in Oxford in 1686 (edited by Ray after Willoughby's death) is really the work of Willoughby with additions by Ray. In this work 420 species were recorded, and students of Indian fishes have often to refer to the descriptions and drawings contained therein. But far greater than any of these investigators was Petrus Artedi (1705—35), who has been justly called the Father of Ichthyology. He was born in Sweden and was a fellow student of Linnaeus at Upsala. Artedi devoted his short life wholly to the study of fish. He went to Holland to examine a large and valuable collection from the East Indies belonging to a rich Dutch merchant in Amsterdam named Albert Seba, and there at the age of twenty-nine was drowned as the result of an accident in one of the Dutch Canals. His manuscript work was fortunately rescued and was edited and published by Linnaeus in five volumes. Artedi attached a descriptive phrase, consisting often of a number of words, to the name of each genus to make up the name of the species. This system of nomenclature is called polynomial. To Artedi we are indebted for references to a large number of our fish; his genera are in almost all cases natural groups corresponding essentially to the families of to-day.

L. T. Gronow, a German, who resided in Holland, closely followed the arrangement proposed by Artedi and increased the number of genera and species from the contents of his own Museum, which contained collections of various distant lands, the East Indies not being excepted. He published three works: *Museum Ichthyologicum* (1754),*Zoophylacium* (1763), and *Systema Ichthyologicum* (1780); none of these a student of Indian Ichthyology can afford to overlook, nor can he overlook the labours of J. T. Klein (1685—1759) which are embodied in five parts of a work entitled *Historia Naturalis Piscium* (1740—49). Jan Nieuhof (1600—1671) also wrote on the fishes of the Dutch East Indies.

Two hundred years ago, in about 1718, Henry Ruysch published at Amsterdam descriptions with drawings of four hundred fishes from India new to science. Eight years after this publication, in 1726, Francis Valentijn (1660—1730), a Dutch clergyman at Amboina and Banda, in his history of those countries, published engraved figures of four hundred and sixty fishes together with short descriptions. Most of these figures are evidently reproductions from Ruysch's work. Another collection of more than four hundred coloured figures of fishes in two volumes was published at Amsterdam in 1754 by Renard. These fishes were painted in colours by the order of M. Balthazar Coyett, when he was Governor of the Molucca Islands. Most of these figures agree with those of Valentijn. "The style of drawing in all the three above-mentioned collections sufficiently denotes the hand of an Indian artist." At one time several of the figures were held to be fictitious, but the eminent naturalist Pallas first hazarded the opinion that the originals of all these drawings would in time be found—a view which subsequent discoveries proved true.

All these authors and compilers followed the cumbrous polynomial system and though we get many glimpses and side-lights from them in our study of the Indian fishes, they are of less importance than the works of Linnaeus and his followers, some of whom proceeded on voyages of discovery to foreign and distant countries.

Carl von Linné, known academically as Carolus Linnaeus, was an early associate and close friend of Artedi and from Artedi he obtained practically all his knowledge of fishes. Linnaeus soon substituted for the polynomial method the convenient and inevitable binomial system which has now endured for over one hundred and sixty years and which must remain the permanent substructure of nomenclature in systematic Zoology.

The works of Artedi and Linnaeus excited fresh activity. Osbeck, an enthusiastic student of Linnaeus, published in 1757 the record of his cruise to China and Java, under the name of *Iter chinensis* in which students recognize many well-known fishes of Indian waters. At about the same time another of Linnaeus' students, Fredrik Hasselquist, published in his *Iter Palestinum* an account of his ichthyological discoveries in Palestine and Egypt. Carl Peter Thunberg, successor of Linnaeus in the University of Upsala, wrote on the fish collected by his student Jonas Nicolus Ahl in the neigbourhood of Nagasaki. Petrus Forskål (1736—63) examined and described the fishes of the Red Sea. His work on the fishes of that region was published posthumously in 1775. Petrus Simon Pallas (1741—1811) traversed nearly the whole of the Russian Empire in Asia and published his *Zoographica Russo-Asiatica.* Commerson travelled with Bougainville and Sir Joseph Banks sailed with Cook and made valuable contributions to knowledge of the geographical distribution of fishes. They discovered new species in the East Indies. The students of Indian Ichthyology cannot afford to neglect any of these pioneer works.

Mark Eliezer Bloch was a Jewish physician, born at Anspach in 1723; when he had reached an age of fifty-six he began to devote himself to Ichthyology. Bloch's work is unique, and will for ever remain so. He received a large number of specimens from Tranqueber from the Dutch Missionaries of Southern India, and a large proportion of his Indian genera are described from types from the Coromandel coast. His well-known genus *Ophicephalus* is one of these. His *Ichthyologia* was published in Berlin between 1782 to 1785. After the completion of this work Bloch occupied himself with systematic work. He prepared a general system of classification of fishes, in which he arranged and described not only those of which he himself was the author but also those with which he had become acquainted from the descriptions of others. The work was edited and published in 1801 after Bloch's death by J. G. Schneider, under the title "*M. E. Blochii Systema Ichthyologiae.*" The number of species enumerated in it amounts to 1,519.

As we have already said, Bloch had formed many Indian genera in his "History of Fishes," but a much more considerable number was formed by Lacèpede in his continuation of Buffon's Natural History. The great work of Comte de Lacèpede, *Histoire Naturelle des Poissons*, was published originally in five volumes in Paris between 1798 to 1803. For original material he depended largely on the collections and notes of the traveller Commerson who has already been alluded to. The figures with which the work is illustrated are inferior to those of Bloch and often the description is referred to one genus and the accompanying figure to another. Lacèpede had to contend with great difficulties in the preparation of his work which was written during the most disturbed period of the French Revolution. To a student of Indian Ichthyology, however, the works of both Bloch and Lacèpede are indispensable.

In the latter part of the eighteenth century there flourished two very enthusiastic workers on Indian Ichthyology who by their long residence and wide travels in this country thoroughly familiarized themselves with the species they came across. Both of them were convinced of the absolute necessity of studying them on the spot and they confined themselves therefore to an exhaustive study of those they examined personally. One of them was Dr. Patrick Russell of the Madras Medical Service and the other Dr. Francis Hamilton (formerly) Buchanan of the Bengal establishment.

Dr. Patrick Russell, M.D., F.R.S., in the course of several years' residence at Vizagapatam was attracted to ichthyological research by the sight of fishermen daily dragging their large seine nets and angling from boats and rafts beyond the surf. He went back home with two hundred figures of fish faithfully delineated by an Indian artist under his supervision; these figures were published with detailed descriptions in 1803 under the patronage of the East India Company at the suggestion of Sir Joseph Banks. They occupy two folio volumes entitled "*Descriptions and Figures of Two hundred Fishes collected at Vizagapatam on the Coast of Coromandel*" It is needless to emphasize the importance of this work to the Indian ichthyologist In the arrangement of the collection and in the treatment of genera Russell followed Artedi and Linnaeus, although before the publication of his *Descriptions* he became acquainted with the works of Bloch and Lacèpede. Of the newly instituted genera only one was adopted from Bloch. In the specific names, where he felt sure of the identification, he adopted Linnaeus' binomial names, but to the species which he thought to be new he merely applied a polynomial descriptive phrase after the manner of Artedi. He made a point of giving the local names employed by the fishermen in the country dialects current at Vizagapatam, Ganjam and at Ingeram on the coast of Coromandel. Russell's predilection for these local names were so great that in the plates they alone are inscribed, with the result that subsequent writers in alluding to Russell's fishes referred to them by local names only. This work will always remain one of constant reference to students of Indian Ichthyology both marine and estuarine.

Dr. Francis Buchanan, M.D. (1762—1829), came from Edinburgh and entered the service of the Honourable East India Company as an Assistant Surgeon on the Bengal establishment in 1794. He was a keen student of nature before his arrival in India, and his enthusiasm continued throughout his official life in this country. With Captain Symes he was sent on a mission to Ava, and there he employed his leisure in collecting natural history specimens in Burma and subsequently in the Andaman Islands. He forwarded his collections and drawings to the Honourable Court of Directors who presented them to Sir Joseph Banks. Returning to India he was stationed for two years at Puttahaut near Luckipoor, not far from the mouth of the old Brahmaputra. The fishes of this locality attracted his attention, and it is here, we have positive evidence to show, that he began to take notes on fish. In a letter to Roxburgh dated 30th November, 1797, he says, "I have given my old painter a gold mohar a month and have him employed on fishes." From the beginning of October, 1798, till the commencement of 1800 Buchanan was stationed at Baruipur in the Twenty-four Pergana District. While here he had occasion to make several voyages in the Western Sunderbans and utilized these opportunities to become acquanted with Gangetic estuarine fishes. In 1800 he was commissioned to report upon the state of Mysore and Malabar, lately acquired from Tipu Sultan. In the course of these travels he discovered three new species of fish, descriptions of which, with figures, he included in his reports published in three volumes between 1805—07 under the title "*A Journey from Madras through the Countries of Mysore, Canara and Malabar, etc.*" These descriptions are the first published contribution by Buchanan to Ichthyology. His copious notes on fishes collected while he was stationed at Puttahaut and at Bauripur, were incorporated in his *Account of the Gangetic Fishes* to be referred to later on. In 1802 he was sent with Captain Knox to Nepal where he collected extensively. He continued his study of Gangetic fishes when he had charge of the menagerie at Barrackpur during 1804—05. In 1806 he was directed to make a comprehensive statistical survey of the territories comprising the Presidency of Bengal as well as a portion of Assam and some other adjacent districts. Buchanan's time was wholly occupied in this work for seven years, from the rainy season of 1807 till the hot weather of 1814. He covered the districts of Rungpur, Dinajpur, Goalpara, Purnea, Bhagalpur, Monghyr, Gaya, Patna, Shahabad and Gorakpur, making journeys also to Allahabad and Agra.

Buchanan took extensive notes on fish and fisheries of the districts he surveyed and incorporated them in the report which he submitted in manuscript to the Court of Directors of the East India Company. He also had drawings (about 194 in number) made of these fishes by Indian artists under his supervision and submitted them with his report. Verbatim extracts from this manuscript report were published by Montgomery Martin in 1838 in three volumes under the title *Eastern India*, with Martin's name on the title page, a work popularly known as *Martin's India*. In these volumes Buchanan's notes on the fish and fisheries of the different districts were quoted, but in so casual a manner that they are useless alike to pisciculturists and ichthyologists. The full report on fish and fisheries was eventually published by Sir William Hunter in 1877 in the twentieth volume of his *Statistical Account of Bengal* with footnotes by Dr. Francis Day on the names under which the fish are referred to in the *Fishes of the Ganges*. The drawings illustrating Buchanan's work have, however, not yet been published. One set consisting of one hundred and forty-nine original coloured figures and forty-five copies of originals, all made by Indian artists under Buchanan's supervision, are in the possession of the Asiatic Society of Bengal. Buchanan returned home in 1815 and for family reasons adopted the name of Hamilton. On his return he busied himself in preparing and publishing his accounts of Nepal and of Assam and tables of the genealogies of Hindu dynasties. As soon as these works were finished he arranged for publication the most sustained and notable of his zoological works, *An Account of the Fishes found in the River Ganges and its Branches*, with a volume of plates in royal quarto. In this treatise he embodied the observations of nearly twenty years. The numerous drawings made at Puttahaut, Baruipur and at Barrackpur were all his property and they were incorporated in the volume of plates illustrating the work. Those made between 1807 and 1814 were part of the report on the Statistical Account of the Presidency of Bengal and he was deprived of their use. It is not necessary here to enter into the circumstances which brought this about, but the incident was unfortunate as the published volume of plates is less complete than it would otherwise have been. It has been already stated that Dr. Francis Buchanan subsequently assumed, for family reasons, the surname Hamilton, and this name appears on the title page of his *Account*. Cuvier, however, suggested that although he signed himself by his new name in his *Account of the Fishes of the Ganges* he should be recognized amongst scientific writers as Dr. Hamilton Buchanan, as under the latter name he was best known amongst naturalists. The importance of his excellent work on the Indian fishes cannot be exaggerated. In a letter written by the late Mr. J. B. Hamilton of Leny (son and successor of Hamilton Buchanan) to Mr. H. Beveridge there is a reference to an interview with Dr. Günther who, speaking of this work, informed Mr. Hamilton that "he always kept it on his table for reference; he had implicit reliance on it as an authority, for it was the work of one who recorded with absolute truthfulness the results of his own observations and nothing more or less." Günther has remarked elsewhere, "Hamilton Buchanan's works were distinguished by a greater accuracy of their drawings than was ever attained before."

Almost contemporaneous with these two Indian workers there arose a master mind in France who revolutionized our conception of Ichthyology in all its branches. With Georges Leopold Chretien Frederic Dagobert Cuvier (1769—1832) we have the beginning of a new era in this branch of Zoological Science. Cuvier did not occupy himself with the study of fishes merely because this class formed part of the "*Regne animal arrangé après son Organization* (1817)" but devoted himself to it with particular predilection. Indefatigable in examining all external and internal characters of fishes from all parts of the world, brought together mainly through his ceaseless activities and masterful influence, he ascertained the natural affinities of the infinite variety of species and accurately defined the divisions, orders, families and genera of the class. Soon after the year 1820, Cuvier, assisted by one of his pupils, A Valenciennes, commenced his great work on fishes, *Histoire Naturelles des Poissons*, of which the first volume appeared in 1828. After Cuvier's death in 1832 the work was left entirely to Valenciennes who left it unfinished with the twenty-second volume (1848). Incomplete as the work is, it is indispensable to students of Indian Ichthyology though Cuvier had to depend too much on the report of M. Leschenault, a superficial observer, and his collections from Pondichery, and often disregarded or passed over the results of Hamilton Buchanan's masterful studies. It has been already noticed that the great work of Cuvier and Valenciennes was left incomplete; but several authors subsequently supplied detailed accounts of the orders omitted in that work. Johannes Muller (1808—1858) of Berlin with Dr. J. Henle published an account of the Plagiostomes, J. J. Kaup of the Muraenida and Lophobranchi. A. Dumeril commenced an *Histoire Naturelle des Poissons ou Ichthyologie Generale* of which only two volumes (Plagiostomes and Lophobranchi) were published, when the publication was suspended owing to the death of Dumeril All these publications are of the highest importance to students of Indian fishes, nor can they afford to neglect the results of various voyages of discovery, mostly stimulated by the work of Cuvier and his disciples.

In 1824 Quoy and Gaimard published in Paris a great folio work on the fishes collected by the Corvelle *l'Uranie* and la *Physicienne* in Freycinet's voyages around the world, and in 1834 the same authors gave an account of the fishes collected in Duperry's voyage of the *Astrolabe*. In 1826 Lesson described the fishes of Dumont d'Urvilles' voyage of the *Coquille*. In 1839 Eydoux and Gervais published an account of the fishes of the voyage of *La Favorite*. In England Sir John Richardson (1787—1865), a wise and careful naturalist, wrote of the fishes collected by the *Sulphur* (1845), the *Erebus* and *Terror* (1846), the *Samarang* and the *Herald*. Still more important and far ranging is the voyage of *H.M.S. Challenger*, including the first important work on deep-seas species by Dr. A. Günther. Other valuable work on the deep-sea forms has also been accomplished by Goode and Bean, Gilbert, Garman, Gill, Jordan and Ryder, who have reported on fish obtained by the U.S. Fish Commission Steamer *Albatross* and by the *Fish Hawk* and the *Blake*. Edgar R. Waite and James Douglas Ogilby of the Australian Museum described the collections of the *Thetis*. From Austria the voyage of the frigate *Novara* yielded large material described by Rudolph Kner (1865—68). Nor can the students of Indian fishes neglect the study of fossil fishes, especially the magnum opus of Louis Agassiz, *i.e. Poissons Fossiles*, the catalogue of fossil fishes of the British Museum from 1845 by Dr. Woodhead and others, and above all the splendid publications of Dr. R. H. Traquair of the Edinburgh Museum during last four decades.

Before coming to the Indian Ichthyologists of recent years I will mention the names of a few of those who have devoted their life-time to the study of the fish of the countries surrounding India, for without their help an Indian student cannot proceed far. Foremost among them stands Dr. P. Bleeker.

Dr. P. Bleeker (1819—1878) was a surgeon in the service of the Dutch East Indian Government, who between the years 1840 and 1870 got together immense collections of the fishes of the Indo-Australian Archipelago and described them in numerous papers published chiefly in the journals of the Batavian Society. In 1853 he published a paper entitled *Ichthyologische fauna van Bengalen*, with lists of all the fishes previously described from India and detailed descriptions of 162 species. In 1862 he gave descriptions of 11 species of carp from Ceylon, illustrated with four plates containing eleven coloured figures. Soon after his return to Europe (1860) he commenced a large work illustrated by coloured plates styled *Atlas Ichthyologique des Indes Orientales Néerlandaises*, the publication of which was interrupted after the ninth volume by the author's death in 1878. Splendid as these volumes are, the colouring of the figures only proves the justification of Russel's warning against attempting to colour them outside India.

Professor H. Schlegel, of the University of Leyden, published between 1843 to 1850 his work *Fauna Japonica* on fishes collected near Nagasaki by P. F. Siebold and Bürger. This is a most useful guide to the fishes of that region. Karl T. Kessler (1815—1881) travelled much and wrote extensively on the fishes of Central Asia, Turkestan and Mongolia. Peter Schmidt wrote on the fishes of the Seas of Japan, Edward Rüppell and S. B Klunzinger on those of the Red Sea and neighbouring parts of Africa, Franz Steindachner on those of almost of all parts of the world. Dr. H. E. Sauvage of

Boulogne has written largely on the fishes of Asia, Africa and other regions Charles De Vis, William Macleay, H. De Maclay, J. D. Ogilby, Edgar R. Waite and Clark are all writers of note who made valuable contributions to the knowledge of fish in Polynesian and Australian seas; their works have a direct bearing on the study of Indian fish.

The one work most essential to Indian Ichthyologists, or indeed to the systematic study of the fishes of any region, is the monumental work *Catalogue of the Fishes of the British Museum* published from 1859 to 1870 as the result of the laborious devotion and patient industry of late Dr. Albert C. L. G. Günther, for a number of years the honoured keeper of the British Museum. 6,843 species are described and 1,682 doubtful species mentioned in this work. The publication gave great impetus to the study of fishes, and the number of known species has now been raised to nearly double that dealt with in Günther's great work. Among the extensive contributions to Ichthyology made by this writer, too numerous to be summarised here, students of Indian fishes cannot dispense with his various reports on fish collections made in the course of political and scientific missions and of travels in countries adjacent to India, his *Fishes of Zanzibar* in collaboration with Playfair and *Fische des Südsee* published between 1873 and 1910.

We have to mention some of the more valuable works of Indian Ichthyologists who flourished and worked after Hamilton Buchanan. Foremost of them is the *Fishes of the Dukhun* by W. A. Sykes, who entered the Bombay army in 1804 and was engaged in a statistical enquiry from 1824 to 1831 in the course of which he made a report on the fishes of South-Western India giving descriptions of forty-six species, illustrated by twenty-eight drawings. It was published in 1841 in the *Transactions of the Zoological Society of London*. Dr. T C. Jerdon of Madras devoted some time to Indian fishes. His "*Fishes of Southern India*" and "*Ichthyological Gleanings in Madras*," published in 1849 and 1853 respectively in the *Madras Journal of Literature and Science*, are important contributions. Mr. J. Bennett of the Ceylon Civil Service published in 1830 an illustrated work containing thirty coloured figures of fish found on the coast of Ceylon. Dr. Cantor of the Bengal Medical Service contributed *Notes respecting some Indian fishes* in the *Journal of the Royal Asiatic Society* in 1839, and subsequently in 1849 published his important *Catalogue of Malayan Fishes* in the *Journal of the Asiatic Society of Bengal*. The latter contains descriptions of 292 species illustrated with plates Dr. John McClelland, also of the Bengal Medical Service, published a memoir on *Indian Cyprinidae* in the second part of the nineteenth volume of the *Asiatic Researches*, besides contributing numerous papers on Indian fishes in the pages of the *Calcutta Journal of Natural History*, which he published and edited for six years from 1841. Mr. Blyth, the distinguished Curator of the Museum of the Asiatic Society of Bengal, contributed several interesting and important articles to the *Journals* and the *Proceedings* of the Society from 1858 to 1860 on several fish collections from India, Burma and the Andaman Islands. Mr H. S. Thomas of the Madras Civil Service has left valuable information in his *Rod of India* and *Pisciculture in South Canara.*

The *Fishes of India* by Dr. Francis Day, published in parts between 1875 and 1878 and fully illustrated is considered to be a fairly complete account of the fishes of the Indian Empire, including Burma and Ceylon. Dr. Day (1826—1889) belonged to the Madras Medical Service and was stationed from 1859 to 1862 at Cochin. His work in spare hours resulted in a folio volume on the *Fishes of Malabar* in 1865 a beautifully illustrated publication, though in other respects a most disappointing performance In 1867 Sir Arthur Cotton drew the attention of the Secretary of State to the supposed injury that had been done to the coast fisheries by weirs constructed in all the principal rivers of the east coast for irrigation and the Madras Government in 1869 appointed Francis Day to investigate the matter. His deputation was afterwards extended to Orissa, and Lower Bengal and subsequently to British Burma and the Andaman Islands. He reported that the knowledge of the Ichthyology ot this part of the world was exceedingly imperfect. On this representation Dr. Day was appointed Inspector General of Fisheries and carried on fishery investigations from 1871 to 1874. The results were embodied in two official reports in the year 1874, on *Freshwater Fish and Fisheries of India* and on *Sea fish and Sea fisheries of India.* He published his *Fishes of India* in parts, as already mentioned, besides contributing a large number of papers to the Zoological Society of London. It is unfortunate that he could not find time nor opportunity to examine fully and critically the pioneer works on Indian species by Russell and Hamilton Buchanan. Numerous instances of carelessness have been cited on diverse occasions by various authors who have followed him, and these need not be repeated here. In 1889 he edited in two volumes the publication on Indian fishes in the *Fauna of India* series. With all their defects Dr. Francis Day's contributions are indispensable to all Indian workers. Francis Day was soon followed by Dr. A. Alcock in India and Dr. G. A. Boulenger and Mr. Tate Regan in England, who as a result of their researches on various collections of Indian fish contributed extensively to the pages of Journals and Proceedings of various Scientific Societies. Though the honour of being the first to carry out deep-sea biological investigation in the Indian Ocean belongs not to the Marine Survey of India but to an officer of the Indian Museum, the late Mr.

James Wood-Mason, the real credit of elucidating the taxonomy of the deep-sea forms belongs to that indefatigable worker Colonel Alcock, for many years Surgeon Naturalist on the R.I.M.S. *Investigator*. It is on his work that we have entirely to depend for our knowledge of the deep-sea fish of Indian seas. His fascinating book *A Naturalist in Indian Seas* will be read with interest by every student of Indian Ichthyology.

Of recent contributors to Indian Ichthyology we are indebted among others to Dr. G. A. Boulenger, Mr. Tate Regan, Dr. Willey, Dr. N. Annandale, Major R. Lloyd, Captain F. H Stewart, Dr. J. Travis Jenkins, Captain Sewell. Dr. Duncker, Dr. Zugmayer, together with Mr. James Johnstone and Mr. J. Hornell. Of workers on fish of neighbouring countries, the Indian student cannot but give his best attention to the numerous contributions that are being almost daily made among others by Prof. Max Weber and Dr. Beaufort on the fishes of the Indo-Australian Archipelago, Dr. Alvin Seale on the fishes of Philippine Islands, Mr. S. Tanaka on the fishes of Japan, Dr. Boulenger, Drs. Gilchrist and Thomson on South African fishes, Henry Fowler on fishes of Borneo, Dr. Theodor Gill and Mr. E. W. Gudger on fishes of the Atlantic Ocean and Mr. Berg on Central Asian fishes. Among workers in distant lands we are very much indebted to Dr. David Starr Jordan and his associates and disciples working in America, Japan, China, and the Philippine Islands for their careful studies of Indian fishes and Indian literature on fishes and for pointing out various mistakes in authors who have followed Russell and Hamilton Buchanan. It is with feelings of profound regret that all workers in the field of Ichthyology realize that Dr. Jordan is bringing his Ichthyological researches to an end He is now turning his attention from Ichthyology and its taxonomy to larger but perhaps less charming studies in the relations of nations. We can but hope that his work in this new sphere of endeavour will be as fruitful as the forty years which he devoted to Ichthyological study from which he retires, following the example of Linnaeus by naming his last described species *bona-nox* "good night."

Plasticity and evolution among the aquatic molluscs of the Inle Lake in the Southern Shan States.—*By* N. ANNANDALE.

The Inle lake is a solution lake now very much shrunk and shallowed but once of large extension and considerable depth It lies in the limestone belt of the Shan Plateau, 3000 feet above sea level. The molluscan fauna includes over 50% of endemic species, and the lake seems to be the headquarters of two remarkable genera of which a considerable number of species are found only in the Shan States. The molluscs have been studied from a systematic, a geographical and a palaeontological point of view as well as from that of evolution. The conclusions drawn are as follows:—

(1) That racial plasticity is a more common phenomenon than extreme individual variability, and that the two are not necessarily correlated.
(2) That in very few instances is it possible to detect any advantage that the race can have gained by its plasticity.
(3) That the moulding forces, or the causes of plasticity, of greatest influence are not the same in all species, and that among them apparently slight differences in environment are sometimes of greater practical moment than changes which seem to be much greater.

A primitive eel from the Southern Shan States.—*By* N. ANNANDALE.

Among the most interesting specimens collected on a recent tour in the Southern Shan States were several examples of a small eel with extremely primitive characters, the most important of which are the following:—the tail is fan-shaped; there is a practically free caudal fin supported by two hypural bones; the ethmoid and the vomer are distinct, the frontals paired, teeth are entirely absent from the roof of the mouth; small scales are present in the skin; the branchiostegal rays are few. The eggs are relatively large and provided with abundant yolk. The largest specimen, which is fully adult, is only a little more than two inches long.

With the exception of the Cretaceous genus *Urenchelys*, to which my species is not allied, this eel is the only representative of the order Apodes in which the tail-fin and hypural bones are developed.

Review of progress in our knowledge of oriental Diptera during the last two decades.—*By* E. BRUNETTI.

A brief review of recent work on the Diptera of the oriental region.

Notes on the large Indian Glow-worm (*Lamprophorus tenebrosus*, Walker).—*By* C. PAIVA.

A full description of the larva, pupa and adult female is given. The feeding habits, method of cleaning the body and the preparation of burrows as a preliminary to ecdysis are described in detail. The luminosity of the eggs is also noted and facts bearing on that of the larva and adult recorded.

On the anatomy and life-history of *Rhynchobothrius ilisha*, n. sp., from the intestines of a shark, *Carcharinus gangeticus* (Mull. and Henle).—*By* T. SOUTHWELL *and* BAINI PRASHAD.

In this paper the authors describe a new tapeworm of the genus *Rhynchobothrius* found in the large intestine of a shark *Carcharinus gangeticus* (Mull. & Henle). A full account of the structure both of the larval and adult tapeworm is given.

The larval stage of this tapeworm (which occurs in a tadpole-like cyst) is found in the lateral muscles of the Indian Shad, *Hilsa ilisha* (Ham. Buch.). The adult tapeworm develops from these cysts on the infected Hilsa being devoured by the shark and is found in the intestine of the shark.

Various intermediate stages between the larval stage and the adult tapeworm were found in the intestine of the shark.

The occurrence of the cystic form in the lateral muscles of Hilsa, is of considerable interest, and the possibilities of human infection are discussed.

A description of a Cestode parasite of doubtful systematic position, from the mesentery and liver of Hilsa.—*By* T. SOUTHWELL *and* BAINI PRASHAD

In this paper the authors describe a Cestode parasite found in the mesentery of Hilsa. The infection is so heavy that the mesentery becomes a massive liver-like organ. The anatomy and development of the parasite are described. The parasite is unique in having only a parthenogenetic method of reproduction.

The systematic position of the parasite is a very anomalous one. The authors, after discussing its structure and affinities with both the Cestodes and Trematodes, come to the conclusion, that it is an adult Cestode in which many of the adult characters have become masked owing to degeneration.

On methods of asexual and parthenogenetic reproduction in Cestodes.—*By* T. SOUTHWELL *and* BAINI PRASHAD.

The authors, in this paper, discuss the various methods of asexual and parthenogenetic reproduction found amongst larval and adult Cestodes.

1. Internal proliferation from the wall of the cysticercoid larval stage, as exhibited in *Polycercus*, *Coenurus*, etc.
2. Endogenous budding as shown in Willey's *Merocercus* and the larval form of *Tetrarhynchus unionifactor*.
3. External budding as exemplified in larval stages of tapeworms like *Staphylocystis*, etc.
4. Parthenogenetic reproduction in an adult tapeworm.

The calcareous glands of earthworms.—*By* J. STEPHENSON *and* BAINI PRASHAD.

The older view of the calcareous glands of earthworms, as given for example in Beddard's monograph, is that they are to be looked on as diverticula, more or less complicated, of the oesophagus. Recently Combault, working on the Lumbricidae, has seen reason for thinking that the epithelium of the lamellae of the glands represents the walls of the blood vessels of these very vascular structures,—in this following Harrington; the epithelium would then be of mesodermal origin. In a later paper, however, he thinks it is difficult to say from which germinal layer the glands are derived. Since the view that the glands are mesodermal has been taken up in a recent elementary text book, it seems desirable (earthworms being among the types studied by all junior students) to combat this, in the view of the authors,' erroneous idea.

The glands have been examined in *Eutyphoeus*, in which genus they have not previously been subjected to histological study, as well as in a number of other Indian species. The conclusion is that, as long ago held by Beddard, the various degrees of complexity of the glands represent increasing degrees of complexity of folding of the epithelial lining of the oesophagus, and that their epithelium is therefore hypoblastic in origin. Such embryological evidence as is at the command of the present authors confirms this view.

The lymph glands in the genus *Pheretima*, with a note on the coelomic organ of Beddard and Fedarb.—*By* G. S. THAPAR.

Our present knowledge of the lymph glands in the genus *Pheretima* is due to Beddard and Schneider. The first of these authors regards them as solid masses of cells surrounding a few muscular fibres; the second as tree-like branching structures around the margins of perforations in the septa. Neither of these views is correct; the glands are forward evaginations of the septa, which form thin membranous sacs, within which are developed the lymph cells which constitute the bulk of the glands.

The "Coelomic Organs" which Beddard and Fedarb apparently supposed to be present in all specimens of *Pheretima posthuma*, are but rarely found, at any rate in specimens at Lahore: a more complete histological description of these structures is given than had previously been furnished.

The valves of the bloodvessels in the genus *Pheretima*.—*By* Pt. S. K. Zibbu.

The valves and the course of the circulation (which depends largely on the position and direction of the valves) have been studied by a large number of observers, but mostly in the Lumbricidae. Bourne is the only investigator who has published an account of the subject in any Indian earthworm; his results were obtained on *Megascolex caeruleus.*

In *Pheretima* the valves of the dorsal vessel have the same position and structure as in the genera already investigated. In the condition of the hearts, however, *Pheretima* differs from both the Lumbrididae, which have valves along the course of the hearts, and from *Megascolex*, where there are no valves at the junction with the ventral vessel (at least Bourne does not mention any); in *Pheretima*, the valves are at the junctions with the supra-intestinal and ventral vessels. The septal loops have valves at their junction with the dorsal vessel.

The disposition of these latter valves shows that the blood must enter the dorsal vessel from the septal loops, which correspond to the dorso-parietal and dorso-integumentary vessels of a number of authors. This view of the circulation is opposed to that of Bourne and Beddard, but agrees with that of most other writers.

The origin and ethnological significance of Indian boat designs.—*By* J. Hornell.

The principal types of existing small craft comprise:--

1. The catamaran or raft form.
2. The basket-boat or coracle.
3. The dug-out canoe.
4. The outrigger design in two forms, either with
   (*a*) the float boomed out, or
   (*b*) a transversely placed balance board amid-ships.
5. Lateen rigged boats, with grab bows.
6. High sterned river craft with quarter rudder-paddles or with balanced rudders.
7. Square-rigged river boats with double masts of A-form.

The catamaran appears to be of indigenous origin as nowhere else does it show such elaboration as in India; its most primitive form is seen in reed rafts and in plantain stems skewered together.

The Indian basket-boat is identical with that used in Mesopotamia, while river craft using quarter steering oars (Ganges) and those with mast triangles (Burma) are distinctively Egyptian in origin, the latter shown in paintings of Nile boats of the 4th to the 11th dynasties, after which it died out in Egypt: this design is also seen in Java.

Lateen-rigged craft with overhanging bows are found only on the West Coast of India; they appear to be of Arab origin, representing probably the evolution of the boat form used by the Sabaeans of S. W. Arabia in the earliest stage of traffic between Arabia and India.

The outrigger design is much more widely spread on Indian coasts than is commonly known. It flourishes strongly on the Konkan Coast (Bombay Presidency) and I have seen examples as far north as Baluchistan; it appears again in great strength in Ceylon and Palk Bay and also in backwaters near Cuddalore and Porto Novo on the Carnatic Coast, while as far north as the Godavari balance-board canoes are used for sea-fishing. The size of these outrigger boats is often considerable and may exceed 30 tons register in the case of Ceylon and Point Calimere coasters—the former possessing a floating outrigger, the latter (3-masted) having a balance board. The discontinuity and wide extent of the distribution of outriggers on Indian coasts suggest great antiquity. Large boats of this style are seen in the Boro Budor sculptures in Java of the 8th century A.D. India is the only country in the world outside of Madagascar and Zanzibar and the Malaya-Polynesian region where the outrigger design has ever penetrated.

The main conclusions I have come to are as follows:—

(*a*) That the pre-Dravidian population of, at least, coastal India was largely of Polynesian stock, these fisherfolk using, like the peoples of Malaysia and Polynesia of the present day, outrigger canoes and balance-board proas

(*b*) That the true Dravidians, who appear to be a branch of the Mediterranean race, learned or invented the use of the circular coracle while living in Mesopotamia, and on arrival in India, *viâ* Baluchistan, introduced the boat forms of the Nile and the Tigris, the former on the great perennial rivers, the latter on those that carry little water in the dry season.

Cranial measurements, which I have lately taken of the various castes in the extreme south of India, reveal an unexpectedly strong brachycephalic element in the lower caste population. Of 50 Parawas (fisher-caste) measured, the average cranial index was 79·4; while of 100 Shanars (palmtree tappers) it was 80·7. Hitherto all the people of this region have been considered typically dolichocephalic, so this discovery throws fresh light upon the ethnological problem of who were the fierce Nagas found by the Tamils on their invasion of South India, upon the introducers of the outrigger canoe into India, and may be upon the route followed by those Austric wanderers who peopled Madagascar with tribes akin to those of Malaysia and Polynesia—Polynesian and Malays being both typically brachycephalic.

Various other facts are enumerated pointing to the validity of my main hypothesis of a strong Polynesian element in our coastal population.

Serpent shrines in Malabar, Cochin and Travancore.—*By* L. K. Ananthakrishna Aiyar.

The relics of serpent worship are common throughout Southern India and Ceylon. Snakes carved in granite stones are numerous in and around Jain temples also.

In Malabar, Cochin and Travancore, there are serpent shrines in every compound, and images of serpents carved in granite stones are placed underneath trees. Offerings of milk, fruits and boiled rice are made to them on auspicious days. Any indifference or negligence in the performance of ceremonies is believed to bring on leprosy, itch, barrenness, death of children, etc.

Foremost among the shrines in the provinces above mentioned, is the one in the compound of the house of Pambinmelkat Illam in Cochin. Several kinds of ceremonies, Noorumpalom, Pambin thullal, etc., are performed to propitiate the deities in the serpent groves.

Equally famous is the shrine at Mannarsally in Travancore. The family and the origin of the installation of the deity have a curious mythical origin. The ceremony of sarpapattoo to propitiate the deity in the grove is very important.

In some unexplained way there exists an intimate connection between the worship of Subramania and that of the serpent, and it is explained by the fact, that his most famous temples are on hill-tops, and that he is connected with the tree and serpent worship and the Sylvan deities.

Some remarks on Somatology of the people of Calcutta.—*By* K. S. Ray.

In Anthropometry very little attention has been paid to the shape of the trunk. But certain racial differences in this respect are well shown in a series of photographs recently taken at the Indian Museum, Calcutta. The differences are to be found both in the shape of the trunk as viewed from before or behind and in the profile of the abdominal region.

Notes on the life-history of *Ophiocephalus punctatus*, Bloch —*By* C. R. Narayan Rao.

The observations recorded in the paper supplement the already published accounts in certain particulars, such as for instance the mode of transference of the oil globule to the liver, the origin of the pelvic fins and the opening of the rectum on an anal lobe and the colour changes during the period of larval development. Nothing beyond a bare reference is made to the remarkable yolk sac circulation which, however, will be described in detail in a paper to be published soon; it may be noticed here that at about the same stage, the circulation in the yolk sac in the larvae of *O. punctatus* differs with that described by Dr. A. Willey in those of *O. striatus*.

Some South Indian Coccidae of economic importance.—*By* T. V. Ramakrishna Ayyar.

The economic importance of scale insects and mealy bugs is very little known in India. A knowledge of these will be very useful to fruit growers and horticulturists as these insects are specially partial to trees of various kinds. The object of the paper is to point out the importance of these insects to agriculturists in general and to gardners and orchardists in particular. The paper deals with 32 species which have so far been noted to play some part (chiefly as crop pests) as economic insects. Only a few have been noted on some of the important field crops, while most of the forms have been found on trees of different kinds. Though many of the species are not yet of serious importance, there is a tendency on the part of some forms gradually to increase their activities as there is a general increase year after year in the fruit area of the country. A knowledge of the local species will also help us to know the foreign forms that are likely to be introduced through fruit, bulbs, roots, orchids and nursery stock of various kinds. India is fortunate in that it does not yet suffer from some of the notorious scale insects of the West—such as the San Jose Scale, Fluted Scale, etc., some of which are known to do considerable damage in the well-known fruit tracts of Australia, South Africa and California. Most of the forms noted are illustrated with diagrams which will help one in identifying them to a certain extent

Section of Botany.

President—R. S. Hole, Esq., *F.C.H.*, *F.L.S.*, *F.E.S.*,
Forest Botanist, Dehra Dun.

Presidential Address.

Plant Oecology and its Bearing on Problems of Economic Importance in India.

(With Plates V—X.)

Objects of Oecology.

1. Plant oecology is the study of the relationship existing between the plant and the various factors which constitute its habitat. One of the most important objects of this study, therefore, is accurately to determine the nature and intensity of these factors, such as soil-moisture, soil-aeration, light, temperature, fire, symbiotic, competing and parasitic organisms, and to discover by experiment and observation the effect of these factors on the life-history and development of the plant. From a scientific point of view this study is essential for a correct understanding of the causes responsible for the physiognomy of species and types of vegetation and for their existing distribution over the earth From an economic point of view this study is no less important, inasmuch as it reveals to us the conditions necessary for the healthy development of those plants which are of economic value and the causes of their diseases. I propose to indicate briefly in the present paper some of the directions in which this work has recently yielded, or appears likely to yield in the immediate future, tangible results of definite economic value in India.

Treatment of Grass-lands.

2. In connection with a proposal to manufacture paper-pulp from *ulla* grass (*Anthistiria gigantea* Cav., subspecies *arundinacea*, Hack.) in the Pilibhit Division of the United Provinces, it recently became necessary to determine the best method of cropping this grass, with the object of obtaining a sustained maximum yield per unit of area of flowering culms which constitute the most valuable portion of the crop, both as regards the quantity and quality of the pulp produced by them.

In a case of this kind the first step is to study the normal development of the flowering culms, then to determine which factors of the habitat appear to be the most important as regards their capacity to materially influence the yield and finally to test the effect of these factors by actual experiment. Plate V, fig. 1, represents a number of *ulla* plants with mature flowering culms in November. Plate V, fig. 2, represents the same plants a few days later; the plants on the right have been cut over completely about 9 ins. from the ground, whereas in the case of the plants on the left, only the mature flowering culms have been removed At first sight, the tufts of large well-developed green leaves visible in these latter plants might be mistaken for the so-called sterile shoots often seen in grasses of temperate regions. This, however, is not the case and these leafy tufts are the immature culms which, if allowed to develop normally, will attain a height of 12-15 ft., and will flower in the following cold season. Any factor, therefore, which, like cutting, checks or weakens the development of these immature shoots will affect the yield of flowering culms. In addition to the method of cutting, the most important factors of the habitat from this point of view are:—

(1) *Grazing.*—The young shoots of *ulla* are extensively eaten by deer, nilghai and other animals, the damage done being equivalent to the repeated cutting back of the young culms.

(2) *Fires* which diminish the quantity of organic matter and moisture in the soil. directly injure more or less the *ulla* plants and greatly increase the damage from grazing by clearing away unpalatable old leaves and culms and facilitating the access of animals to the young shoots

The grazing of wild animals could not be prevented except at prohibitive cost, but experiments were carried out over 24 acres in the Pilibhit grasslands to test the effects of clear and partial-cutting, with and without burning. These experiments have shown that cutting only flowering and dead culms coupled with fire-protection increased the dry-weight yield of flowering culms by 83%. while the other methods tried decreased the yield by 20-60%. In this case the object of management is to produce the maximum yield of the hard cane-like flowering culms. In other cases, however, our object is to obtain from coarse grasses of this type the maximum quantity of fodder, *i.e.* of tender leaves, and to prevent, as far as possible, the normal development of the stout woody flowering culms. Consequently, in such cases, burning is essential, in order to give the cattle free access to the immature young leafy shoots, the constant grazing of which will effectually prevent their normal development.

Reproduction of Sal forests.

3. If the establishment of seedling growth is sufficiently delayed, this must eventually result in the extinction of our natural forests. In some cases this is by no means a remote contingency and, in many others, although the seedling growth is considerably better, yet the delay in establishing it is so great as to interfere seriously with the economic exploitation of the forest, thus causing considerable financial loss. This is particularly true of our valuable Sal (*Shorea*

robusta) forests. The results of experiments which have now been carried out over a series of years to test the effect of various factors at present indicate that the following have most influence on the development of Sal seedlings in the moist forests of northern India :—

(1) *Bad Soil-aeration.*—In the Sal forests during the rains germination is diminished, a large number of seedlings usually die and the root-development of others is retarded by insufficient soil-aeration. The moister the soil and the greater the quantity of organic matter in the soil, the more injurious this factor becomes. Hence it is best controlled by burning off the soil-covering of dead and decaying leaves and by removing the overhead cover, thus exposing the soil to the sun and air. That we are not dealing here with a case of insufficient light for the healthy development of the seedlings is shown by the fact that vigorous seedlings can be grown with a light of similar, or even less, intensity provided the soil is well aerated [1]

(2) *Drought.*—This causes widespread damage to seedlings during the season of short rainfall from September to June.

On loam Sal seedlings die or die back when the water-content of the soil near their roots falls as low as 10%. During the dry season this death-limit is commonly reached in the upper six inches of soil both in the shady Sal forest and in the open, while below this depth the moisture content steadily increases downwards. Sal seedlings, therefore, are not safe from damage by drought unless their roots have attained a depth of well over six inches at the commencement of the dry season. Owing chiefly to insufficient soil-aeration, however, the roots of seedlings in the shady forests have not as a rule attained by this time an average length exceeding six inches, whereas on the same soil in the open they have usually attained a length of 18 inches. Damage by drought can, therefore, be best prevented by securing vigorous root-growth during the rainy season as noted under (1) above and secondly by making our clearings in the forest in small patches or narrow strips, so that in the dry season the soil may be kept moist and transpiration from the plants diminished by the side-shade from the adjoining trees.

With due regard to the above factors, therefore, the best treatment to adopt in order to secure the rapid establishment of healthy Sal seedlings consists in—

(*a*) burning off the soil-covering of dead and decaying leaves;

(*b*) clear-felling in small patches or narrow strips (the diameter of the former and width of the latter usually not exceeding 60 ft.). combined with artificial sowing and weeding, when necessary, during the first two or three years. In such small clearings, also, the side-shade is sufficient to prevent frost damage and very materially reduces the competition of grasses and other herbaceous weeds.

---

[1] *Indian Forest Records*, V, 4, part II, p. 72 (1916).

Plate VI, fig. 2, indicates the development of Sal seedlings in a cleared patch 60 ft in diameter and plate VI, fig. 1, shows the corresponding development in the shade of the adjacent forest. In both cases the plants are two years old. The edge of the cleared patch in this case is only 25 yards from the edge of a large grassland in which all young Sal are annually cut back by frost. No such damage occurs in the cleared patch.

Plate VII indicates the relative vigour of the competing weed growth in cleared patches respectively 60 ft. and 180 ft. in diameter, two years after the clearing.

Reproduction of Teak forests.

4. Experiments carried out in 1913-15 indicated that teak seed germinated very badly and tended to remain dormant for several years under shade. This was found to be the case under an artificial iron shade and also under the natural shade of trees both in loam and well-aerated sand. These experiments, so far as they go, indicate that a high temperature, such as would be obtained in nature by exposure to a hot sun or possibly a forest fire, is probably essential for the germination of teak Moreover the seedlings which do develop are found to be sensitive to bad soil-aeration. An experimental clear-felling carried out in a teak forest also showed that the germination of teak seed and the development of the seedlings were most unusually good in the cleared area. These facts indicate that in moist forests fire-protection is likely to be decidedly detrimental to germination and the development of seedlings, inasmuch as it induces a dense growth of vegetation and heavy shade and a badly aerated soil. Also that in drier forest, where the overhead cover is fairly complete, more or less extensive clear-felling is desirable for the rapid establishment of vigorous teak seedlings.[1]

Plate VIII, fig. 1, shows one of the iron shades used in these experiments which allows all rain water falling on the shade to pass through on to the seed beds below.

Plate VIII, fig. 2, shows two seed beds two years after sowing, the iron shade having just been removed from the right-hand portions of the beds. The only noticeable plant in the shaded area on the right arose from a seed which was outside the edge of the shade. On the left are the two-year-old plants in the unshaded area. The removal of the shade was immediately followed by the germination of a number of seeds which had remained dormant in the shaded area for two years.

---

[1] *Indian Forester*, XLII, p. 51 (1916).

Parallelism between Woodland and Grassland.

5. In 1911 attention was drawn to an oecological fact of considerable interest, viz. that, in India, for each main type of woodland there appeared to be a parallel type of grassland capable of thriving under similar conditions of soil and moisture.[1] Thus in Dehra Dun we can distinguish the following broad types of soil each characterised by a distinct type of woodland and parallel grassland :—

(*a*) With a large percentage of sand and frequently shallow with gravel and boulders below. This soil, therefore, is essentially dry and is characterized by dry miscellaneous woodland with such species as *Acacia Catechu*, *Dalbergia Sissoo* and *Bombax malabaricum* prominent, or grassland with *Saccharum Munja* and *Saccharum spontaneum* dominant (see plate IX).

(*b*) Well aerated loam, characterized by Sal (*Shorea robusta*) forest or grassland with *Saccharum Narenga* dominant (see plate X, fig. 1)

(*c*) Badly aerated loam. This differs from (*b*) usually in being wetter or denser with a slower rate of surface percolation. This is characterized by moist miscellaneous woodland with *Terminalia*, *Butea*, *Mallotris*, and others or grassland with *Erianthus Ravennae* dominant (see plate X, fig. 2).

From the experimental cultures carried out in these soils up to date it appears that (*a*) is usually unsuitable for the growth of Sal seedlings, inasmuch as the water-content of the soil falls rapidly to the death limit after the close of the rainy season, while (*c*) is unsuitable on account of bad soil-aeration which leads to a low percentage of germination, a high percentage of deaths during the rains and a high percentage of deaths during the dry season on account of the superficial poorly developed root system.

In the first place, these facts indicate that the study of soil characteristics such as soil-moisture and soil-aeration, especially as regards their effect on germination and the development of seedlings, is likely in many cases to explain the existing distribution of different types of vegetation.

Secondly, this remarkable parallelism between different types of woodland and grassland is of considerable economic importance. Thus it is obvious that the grasses on an area may indicate to us the species and type of woodland for which a particular locality is most suited, and thus facilitate afforestation and extension of our forests by helping us to select the species most suitable to the locality. By revealing the important characteristics of a habitat, also, grasses may indicate the method of treatment necessary to ensure the successful establishment of a particular species. Thus in dry grassland of *Saccharum Munja* and *S. spontaneum* the chief desideratum, from the point of view of the Sal tree, is a sufficient water-supply which may in some cases be provided by first establishing on the area a thick growth of a shade-giving, humus-forming shrub like *Adhatoda Vasica* which is capable of thriving in a xerophytic habitat. In addition to this, attention to the grass growth in existing forests may indicate to us the treatment necessary to secure the reproduction and permanence of the forest. An instructive example of this has recently come to notice in the Jaspur forests of the United Provinces. The regeneration of these forests has been an unsolved problem for many years, the forest is gradually becoming more open with a dense undergrowth of grass, and unless seedling growth can be established to replace the existing trees these Sal forests must become extinct. The configuration of the ground is irregular, ridges and plateaus alternating with ravines and depressions In the depressions the prevalence of *Saccharum Narenga* indicates suitable soil and moisture conditions for Sal, and in such places the best young growth of Sal is actually found. On the slopes and ridges, however, the prevalence of *Saccharum spontaneum*, *S. Munja*, *Imperata*, *Eragrostis* and others indicates that here the soil is too dry for the satisfactory growth of Sal seedlings. These facts indicate that here we are dealing with a case of denudation. Previous to reservation these forests appear to have become open and the soil denuded and compacted under the influence of fires, unregulated fellings and grazing to an extent beyond that which could be remedied by simple protection. Under existing conditions of simple protection, rain washes away the dead leaves and friable soil particles from the ridges and slopes into the depressions where a good moist soil is accumulating while the ridges and slopes remain dry and hard. The obvious remedy here, therefore, is to increase the soil moisture and improve the soil texture by inducing the rainfall to percolate into the soil *in situ* and by increasing the admixture of humus by preventing the dead leaves from being washed away into the depressions. This can be done by breaking up the soil, supplemented where necessary by running shallow catch-water trenches along the contours. It is interesting to note that a similar parallelism has been recently recognized in the vegetation of the British Isles with *Quercus Robur* woods and *Lolium Cynosurus* grassland on clays and loam, *Quercus sessiliflora* woods and *Nardus-Deschampsia* grassland on shallow siliceous soils, and *Fraxinus excelsior* woods and *Festuca* grassland on limestone.[1]

---

[1] *Ind. For. Mem Bot.*, Vol I, pp. 15, 45 (1911).

It is believed that this phenomenon will be found to be of widespread occurrence and of considerable economic importance.

Damage done by fungus *Trametes Pini*.

6. Turning now to the question of diseases we will first shortly consider the case of the fungus *Trametes Pini* which causes great damage to the Blue Pine (*Pinus excelsa*) in the hills of the Punjab and in Kashmir. As an indication of the damage done, it may be noted that in one Division alone (Simla), the Divisional Forest Officer estimated in 1911 that 80,000 trees distributed over 30,000 acres were infected and that the presence of the fungus in a first class tree reduced its average value from Rs. 20 to Rs 7-8-0. European experience indicated that this fungus could only gain access to a tree through a wound, e.g. that caused by cutting or breaking a branch, and could only attack dead wood. In India, however, there was a complication in that hyphae (apparently belonging to *Trametes*) were constantly found in the living sap wood especially of the roots, even of the smallest roots of the attacked trees. This indicated that infection might take place through the roots, a possibility which would render effective control of the disease practically impossible, and, until this point had been settled, local officers were unwilling to initiate a campaign against the fungus. With the object of deciding this question, an investigation of the habitat factors was carried out in 1911 which established the following facts:—

(*a*) The sporophores are invariably found on the sites of wounds, thus indicating that the fungus first gains access to the interior of the tree at these places. The great majority of these wounds are due to lopping the trees for fuel and manure.

(*b*) In no case is the wood of the roots more rotted by the fungus than is that of the base of the stem.

(*c*) The majority of the primary sporophores are invariably situated on that side of the trunk facing the direction from which the prevailing wind blows at the season of spore-production, except only when no infected forest exists in that direction.

These facts proved that infection was usually effected not through the roots but by wind-carried spores which were able to alight on a wounded surface. Consequently the control of the fungus by prohibiting all lopping was obviously a comparatively simple matter.[2]

---

[1] *Types of British Vegetation*, by A. G. Tansley, 1911.

[2] *Ind. For. Records*, V, 5, 1915.

This conclusion was accepted by the local officers, and Mr. C. G. Trevor, Divisional Forest Officer of Kulu, wrote in 1915 as follows :—

"Wherever lopping has been done there you find this disease, where no lopping has taken place there the trees are sound. I have managed by proving the truth of this to get Government to agree that all Kail (Blue Pine) lopping in demarcated forest must cease."

These facts indicate that the hyphae frequently found in living sap-wood and especially in the roots probably belong to another fungus, possibly a symbient, a point which is being further investigated.

Root Diseases of Sal and Sissoo.

7. Among the most difficult fungi to control in the forest are those which live in the soil and attack and destroy the roots of our trees. Two of these are particularly injurious in India, viz. *Polyporus Shoreae* which attacks the Sal and *Fomes lucidus* which is particularly destructive to Sissoo (*Dalbergia Sissoo*). Both of these fungi are widely distributed and no efficient control measures practicable on a large scale in the forest are at present known. There is reason to believe that any factor which interferes with the normal intake of water such as drought or bad soil-aeration renders trees more liable to fungal diseases generally, and that this is especially the case with soil fungi, the entrance of which into the plant may be facililated by the presence of a number of roots which have been killed or damaged by these factors. It seems probable, therefore, that an effective means of controlling diseases of this class will consist in improved methods of cultivation which ensure a better water-supply and conditions of soil-aeration.

Sissoo is known to suffer from bad soil-aeration and it is significant that the worst attacks of *Fomes lucidus* occur in irrigated plantations, like Changa Manga in the Punjab, where the soil is liable to be badly aerated on account of the surface flooding by irrigation and considerable additions of organic matter, chiefly from the leaf-fall of the invading mulberry, which has been introduced by the canal water. The Sal root fungus, also, although widely distributed in the Sal forests of India, so far as is known at present is most injurious in the wet forests of Assam and Bengal where the conditions of soil-aeration are particularly unfavourable.

Spike disease of Sandal.

8. The last disease which I propose to mention is the well-known spike disease of the Sandal tree (*Santalum album*) which is one of those obscure diseases sometimes classed as physiological and in the case of which no definite causative organism, insect, fungus or bacterium has yet been discovered. An excellent account of this was given to the Science Congress last year at Bangalore by Dr. Coleman, who has pointed out

of plants, the latter are attacked and finally destroyed by insects, fungi or other organisms. In such cases it is usual to consider the organism to be the really important factor and to regard the others as merely "predisposing factors." This terminology is apt to be misleading, inasmuch as it may give the impression that if, in any individual case, a particular organism had not been present the plant would necessarily have recovered and regained normal health. In many cases at least this would not happen, inasmuch as the sickly condition, if sufficiently prolonged, would either result in death from permanent physiological derangement or render the plant an easy prey not to one but to several organisms. The first falling away from health and step towards disease is, therefore, an extremely important point and it is just this which requires careful study and which is frequently overlooked owing to the absence of obvious external signs such as the death of leaves or twigs. A plant suffering from a deficient water-supply and a clogging of its tissues with unutilisable carbohydrates may show no external signs of wilting or withering, also a plant apparently still healthy with green leaves may have a number of its deeper roots more or less completely asphyxiated. Finally, it should be remembered that, whereas the direct control of a widely distributed organism is usually a matter of extreme difficulty, it is often possible to control within considerable limits such factors as water-supply by the ordinary operations of practical forestry, such as those which regulate the degree of shade and quantity of humus in the soil.

Oecology and Sylviculture.

11. It may now be argued that although oecological factors are undoubtedly important in forestry this fact has been recognized for very many years and the study of such factors is the province of the practical sylviculturist who must base his methods of treatment on such study. In the first place such questions as the economic management of grasslands, and the detailed study of diseases do not form a part of the legitimate duties of the sylviculturist. In many other directions, however, the oecologist and sylviculturist do no doubt meet on common ground, and here it is merely a question of mutual agreement and co-operation as to which aspects should be studied by each. Speaking broadly, however, there is a fundamental difference between the two lines of work in this, that the work of the sylviculturist is essentially *extensive* while that of the oecologist is *intensive*. In the case of Sal, for instance, sylvicultural experiments may show that a certain degree of light is necessary for the establishment of reproduction, and with this result the sylviculturist has attained his object, viz. the knowledge which enables him to treat his forest in such a way as to secure its regeneration. The oecologist, however, should go further and should, if possible, deter-

Fig. 1.

Photograph of *ulla* plants (*Anthistiria gigantea*, Cav. subsp. *arundinacea*, Hack.) Showing mature flowering culms in November.

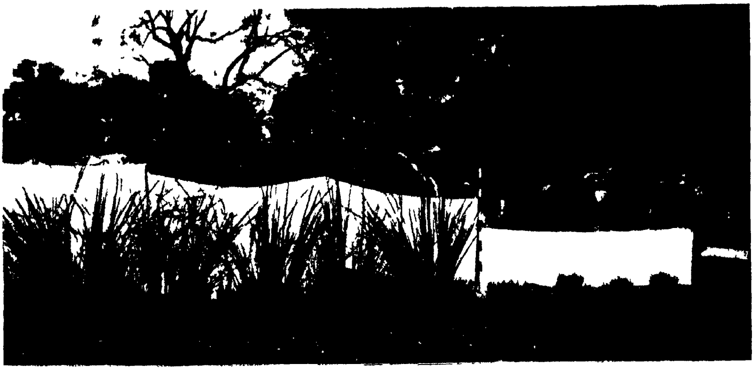


Fig. 2.

The same plants as those shown in fig. 1 above, as they appeared a few days later. The plants on the right have now been cut over completely whereas, in the case of the plants on the left, only the mature flowering culms have been removed.

Photo-engraved & printed at the Offices of the Survey of India, Calcutta, 1918.

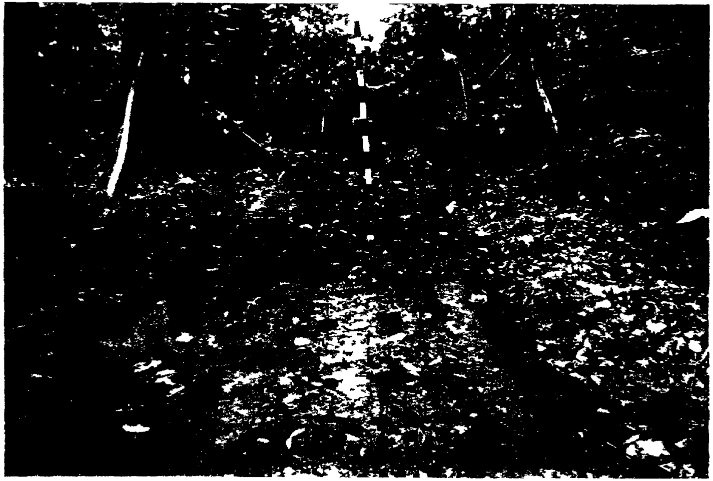


FIG. 1.

Forest shade plot V. Photograph taken 20th July 1915. Note the appearance of the 2 years old Sal seedlings surviving in the plot.

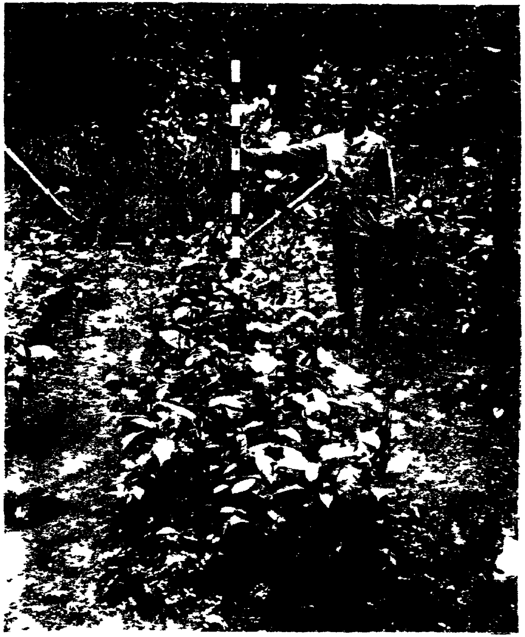


FIG. 2.

Forest plot IV. An area 60 ft. in diameter was here clean felled in May 1913. The photograph was taken on 20th July 1915. Note the vigorous 2 years old seedlings surviving in the plot.

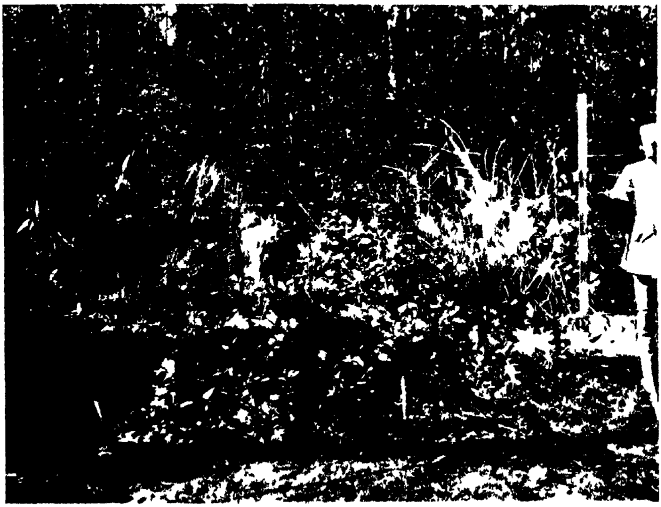


Fig. 1.

A clearing 60 ft. in diameter made in Sal forest in 191 . Photograph taken 2½ years later. Note the absence of heavy grass and weed growth.

Fig. 2.

A clearing 180 ft. in diameter made in Sal forest in 1915. Photograph taken 2½ years later. Note the dense growth of grass and weeds.

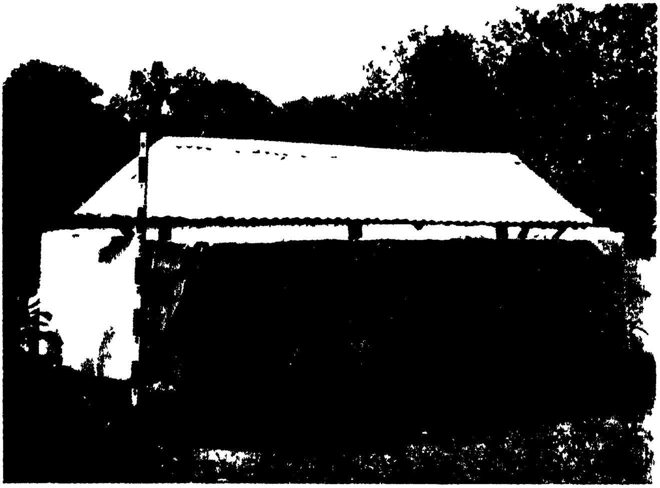


Fig. 1.

Type of iron shade used in the teak germination experiment. The rain water falling on the shade is delivered on to the shaded area below.

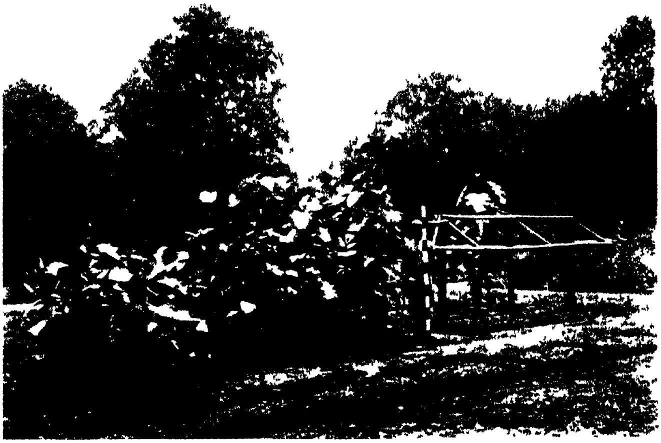


Fig. 2.

Photograph of two teak seed beds two years after sowing, the iron shade having just been removed from the right hand portions of the beds. The only noticeable plant in the shaded area on the right arose from a seed which was outside the edge of the shade. On the left are the 2 years old plants in the unshaded area.

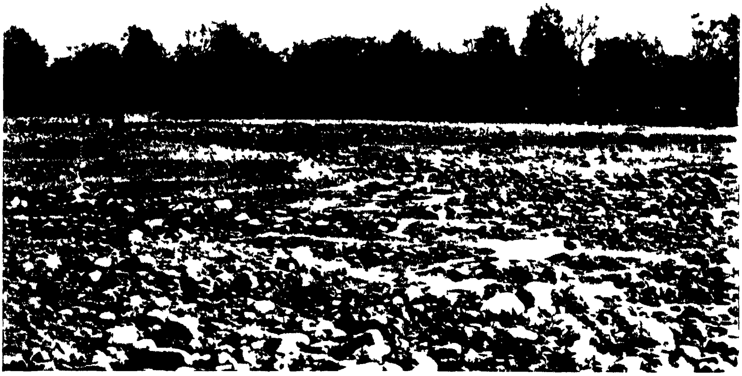


Fig 1

Dry miscellaneous forest on deposits of boulders and sand in Dehra Dun The forest consists of *Bombax malabaricum* *Acacia Catechu* *Dalbergia Sissoo* *Moringa* and others On the edge of the forest are seen the grasses *Saccharum Munja* and *Saccharum spontaneum* which constitute the parallel grassland

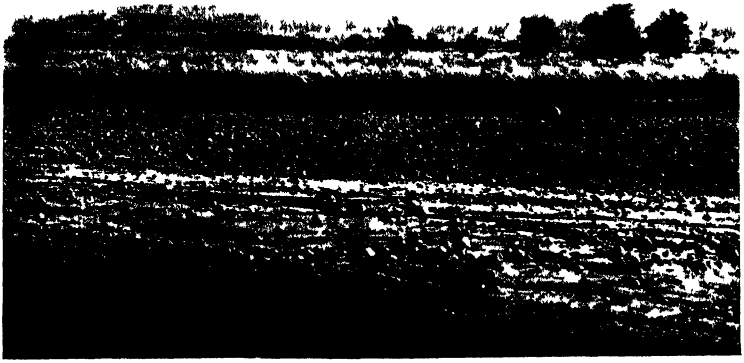


Fig 2

Grassland of *Saccharum Munja* on deposits of boulders and sand in Dehra Dun

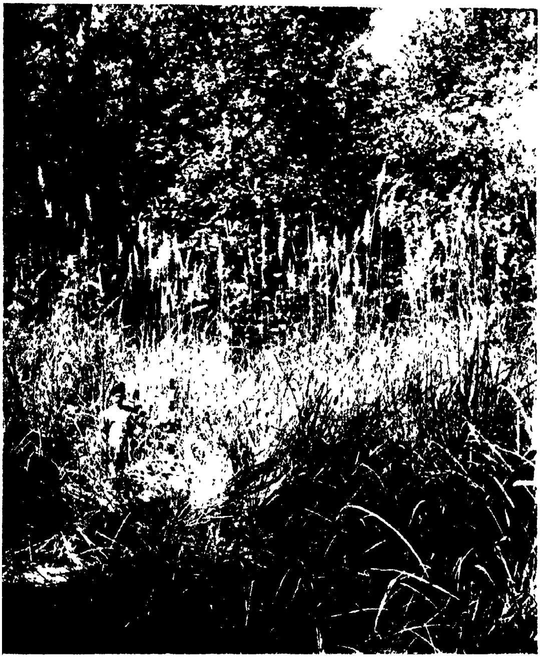


Fig. 1.

Grassland of *Saccharum Narenga* associated with the parallel woodland of Sal (*Shorea robusta*) forest in Dehra Dun.

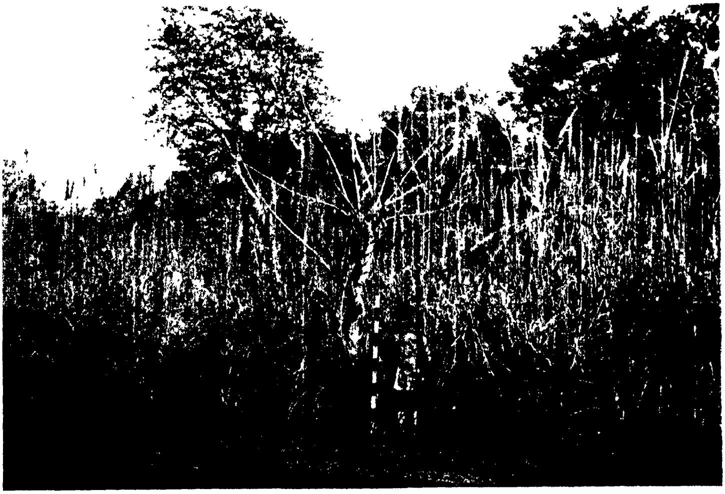


Fig. 2.

Grassland of *Eriarthus Ravennæ* in Dehra Dun associated with the

mine the precise factor concerned and the way in which it acts. He would probably find for instance that the beneficial result of removing the cover in this case consists not in increasing the light available for photosynthesis in the green leaves of the seedling, but in improving the conditions of soil-aeration. This knowledge might explain apparently contradictory results, such as that a similar removal of cover does not have the same beneficial result in forests on sandy soil as in those on loam, it might supply the reason for decreasing increment in woods in which humus is accumulating rapidly and might afford the clue to the primary cause of an injurious root-disease. The practical sylviculturist by taking an extensive, but necessarily superficial, view of the factors concerned is able to obtain results of the greatest economic value very quickly, but at the same time it is perfectly clear that for continued and satisfactory progress in sylviculture a more precise and intensive knowledge of the various factors and the way in which they affect the plant is essential. The work of the oecological botanist, therefore, is the necessary complement to that of the sylviculturist.

12. The above remarks will, I hope, convince you that there is a great field available for oecological study in India and that this study promises to yield results of considerable economic importance in connection with the management of our forests and grasslands and the control of plant diseases.

The sun-drying of vegetables for army purposes.—*By* A. HOWARD *and* G. L. C. HOWARD.

One of the difficulties in the maintenance of military expeditions in sparsely populated arid tracts like the North-West Frontier of India and parts of Mesopotamia, is the supply of fresh vegetables. As is well known, these substances are necessary to prevent loss of efficiency through scurvy and other diseases. What is required is a system of supply which reduces the weight to a minimum and which can be based on the existing Army depots in India. These problems have been solved by utilizing the dry atmosphere of the upland valleys of Baluchistan where vegetables can be rapidly dried in the sun. The product is then pressed into bricks, one pound in weight, and packed into kerosene tins, each containing from 18 to 24 bricks. Six of these sealed tins form a mule load, three being placed on either side in a suitable crate. In this manner it has been found possible to compress the weekly supply of vegetables required by a battalion into twelve tins which can be carried by two mules. The various processes are described and illustrated by means of samples of the product obtained.

Note on natural root-grafting.—*By* A HOWARD *and* G. L. C. HOWARD.

Instances of natural root-grafting in the case of the banyan and pipal are described together with a simple method of obtaining museum specimens. Specimens of natural root-grafts were exhibited.

Some methods suitable for the study of root development. —*By* A. HOWARD *and* G. L. C. HOWARD.

In connection with the study of the root systems of agricultural plants it has been found necessary to find some method by which the fine root ends and root nodules can be traced in the soil. In alluvial soils like those of Pusa, the whole root system down to the piliferous layer and the root can be removed from the soil without damage by means of an ordinary knapsack sprayer

To trace the effect of various substances (such as aerating agents, green manure and other forms of organic matter) on root development a modified form of pot culture has been designed.

The recent results obtained in the study of the root system of Java indigo are dealt with.

Blastomyces et Blastomycoses (comprenant une revision des champignons inclus dans cette classe).—*Par* F. de MELLO *et* L. G. FERNANDES.

The authors say that there is at present great confusion in the botanical conception of the word *Blastomyces* and on the clinical value of the word *Blastomycose.* The Yeast-like fungi included in the *Blastomyces* are classified in several genera, the classification varying with different authors. A systematic revision is therefore called for in accordance with the actual state of our knowledge.

The word *Blastymyces* has had three interpretations. (1) "Fungi which bud."—A purely etymological meaning which cannot stand since every fungus would at some point in its life-history be a *Blastomycete* (e.g. *Endomyces*, *Sporotrichon,* and especially the *Mucorinae*). (2) A restrictive sense excluding the fungi with mycelium (like *Endomyces* and *Oidium*), but including *Saccharomyces* and *Criptococus.* This interpretation cannot stand because many of the *Criptococus* (e.g *C. gilchusti*) have a filamentous mycelium. (3) Reserving the word *Blastomyces* for those fungi of which there is not, or cannot be, sufficient information to classify them in a well-defined genus.

The clinical meaning of the word *Blastomycose* has had the same fluctuations following the botanical meaning of the word *Blastomyces.* The authors then discuss and reject the clinical "exascoses" based on arguments of clinical and botanical order, showing that the so-called *Criptococus* cannot be included in the tribe "*Exascose*" as Guegen and others wish. They propose that the designation of the disease should follow the botanical genus (e.g. *endomyces*, *endomycose, etc.*) and reserve the word *Blastomycose* solely to the following cases; (*a*) when the budding fungus has not been or cannot be classified; (*b*) when the term *Criptococus* ought to stand.

They then discuss the genera of fungi and accept and submit as well identified the following:—

Endomyces (Rees 1870, emend. Vuillemin 1898, including the *Parendomyces* (of Queyrat and Laroche 1909).
Saccharomyces (Meyen 1838, emend. Vuillemin ?).
Octomyces (Mello and Fernandes 1917).
Schizosaccharomyces (Lindner 1908 ?).
Atlosaccharomyces (De Beurman and Gougerot 1909).
Zymonema (De Beurman and Gougerot 1909).
Parasaccharomyces (De Beurman and Gougerot 1909).
Oidium (Link 1809).
Monilla (Gmelin 1791, nec Person 1801).
Oospora (Wallroth 1833).

They define the genera, rejecting the genus *Criptococus* of Kutzing, and reserve it only for those species which, described under this designation, cannot for the present for lack of information be included in the other genera, and make a complete revision of the fungi of a Yeast character, studied up to the present, whether pathogenic or not, classifying them by their known characters. A table is given of the genera showing their relationships by their botanical affinities, where the principal characteristics are the existence or not of the Ascus, the number of Ascospores, the transverse septation, the existence or not of a filamentous mycelium, and the existence or not of Chlamydospores.

On the genus Eriocaulon in India.—*By* P. F. FYSON.

An examination of the genus *Eriocaulon* in the Herbaria of Calcutta, Madras, Dehra Dun, the Agricultural College, Poona, including that of Talbot, and others, has shown certain deficiencies in the published descriptions which have resulted in frequent incorrect determinations. There appear also to be several unnamed species. A description of the floral and general morphology is given, and a revision of the genus as it occurs in India proposed.

With a view to putting our knowledge of the genus in India in a more satisfactory state, a request is made for collections to be sent from all parts of India, and to facilitate the work of collecting a key has been drawn up of all the known Indian species. It differs from the only other general key known to the author, that of Ruhland, in not requiring the dissection of the flowers at the earlier stages.

The Andrœcium of *Plagiochasma appendiculatum* L. et L. and *P. articulatum* Kashyap.—*By* S. R KASHYAP.

1. The andrœcium in both the species is surrounded by scales which when young contain reduced plastids forming a little starch. These scales often show a distinction between a body and an appendage. From the margin of the basal portion numerous mucilage hairs are given off.
2. The andrœcium is usually cordate or deeply bilobed. The anterior ends of the lobes are covered with closely applied young scales.
3. The antheridia arise in a distinctly acropetal succession in each lobe, the youngest being found at the apex.
4. Sometimes the andrœcium goes on growing in the middorsal line without dividing for a considerable time, forming a linear-oblong structure and then divides into two lobes which may again divide.
5. Occasionally the andrœcium shows many lobes more or less irregularly placed, at least some of which have distinct growing points, others being probably due to mere irregularities of growth.
6. The conclusion is that the andrœcium is a branch system with two or more branches comparable to the andrœcium of the higher Marchantiales

The Flora of the Anaimalais.—*By* C. E. C. FISCHER

1. General description of the tract
2. Faunistic notes.
3. Jungle tribes and their cultivations.
4. Division of the vegetation into 5 types, description and characteristic species.
5. General conclusions and synopsis.

Notes on the growth and decay of Potamogeton in the Chilka Lake.—*By* N. ANNANDALE.

In the Chilka Lake on the east coast of India, in which the salinity of the water varies greatly with the seasons, *Potamogeton pectinatus* forms dense subaquatic thickets. The salinity falls considerably in July and August and in this season the plant sends up young shoots. The old shoots begin to degenerate at the same time, and finally great masses of dead and dying stems break loose. Owing to peculiar meteorological conditions these masses are piled up on the western shore of the lake. They there decay, producing large quantities of sulphuretted hydrogen and finally small quantities of free sulphur, which float, mixed with a certain amount of organic matter, on the surface of the water. The agency by which the sulphur is set free is suggested as a matter worthy of enquiry.

Preliminary note on the significance of Nyctiotropism.—*By* T. EKAMBARAM.

1. The hypotheses advocated by Charles Darwin and Stahl are shown to be inadequate.
2. Observations made, as regards the differences between nictiotropic and non-nyctiotropic plants, are given and their significance in the economy of the plants is discussed.
3. The hypothesis that nictiotropism is an adaptation for the absorption and storage of CO_2 at nights, is suggested.
4. A few experiments are stated to show that the capacity for storage of CO_2 is probably a widespread phenomenon among plants.

Hybernating mycelium and the part it plays in the perpetuation and spread of rust on *Launœa asplenifolia* and the smut of Doob.—*By* K. CH. MEHTA.

1. The parasite.
2. Results of experiments carried with a view to find out the perennial nature of the mycelium inside diseased plants of *Launœa asplenifolia.*
3. The part played by spores in the dispersion of the disease.
4. Cause of smut on Doob.
5. Results of inoculations on healthy Doob.
6. Results of experiments which establish the peronnial nature of the mycelium inside diseased Doob.
7. Appearance of disease every year and the production of spores brought about by the mycelium within the underground and perennial portions of *Launœa asplenifolia* and *Cynodon dactylon.*

Dimorphic carpellate flower in *Acalypha Indica* (L).—*By* L. A. KENOYER.

In *Acalypha Indica* are two carpellate blossoms very different in appearance; one, of the usual 3-carpellate Euphorbiaceous type, and another, which terminates the flowering branch, one-carpellate with peculiar hoods on either side.

Study of development shows that this terminal flower is in origin like one of the carpels of the ordinary flowers. But as it develops, both ovule and carpel become completely inverted, bringing the micropyle against the funiculus and the style against the peduncle. The ovule of the trilocular flower becomes inverted and its funiculus by the upgrowth of the common axis is brought toward the distal end, the micropyle being at the distal end. A space left between micropyle and hilum is here occupied in the seed by a conspicuous caruncle, which is practically wanting from the seed of the terminal flower.

The ripening seed of *Ipomea biloba* and its septate structure. —*By* M. S. SABHESAN.

The noteworthy feature in the seed of *Ipomea biloba* is its septate structure. The septum is no outgrowth from either the chalaza or from any other part of the ovule. Morphologically it represents a part of the nucellus which, owing to peculiar circumstances, persists even in the resting stage, and brings about the septate structure. The species of *Ipomea* I have examined agree in the nature of the septum and other details. For instance the presence of a dorsoventral vascular girdle traversing the edges of the septum and the intrusion of the complex vascular system into the nucellus are peculiar to the genus *Ipomea.* The vascular girdle renders a medium storage septum possible, owing to the persistence of which throughout the development of the ovule into a seed, the seed appears bilocular.

Preliminary note on a biological and oecological study of vegetable pond life of Lahore.—*By* S. L. GHOSE.

1. There is a great need for research in Plant oecology, as no work has been done on it in India.
2. Pond life in Lahore is interesting on account of the river Ravi flowing close by, which leaves ponds and pools after the rains.
3. The three seasons of Lahore are winter, summer and rainy, which vary in temperature, and humidity, hence the vegetation also bears different aspects according to the seasons.
4. Three ponds with different environment were chosen for regular and systematic study. Visits were paid fortnightly and physical and vegetative conditions of the ponds recorded. Phytoplankton was collected by means of a net.
5. Investigations carried on so far show how the vegetation is different in and about the three ponds.
6. The future plan of work consists in regularly watching the three ponds as to their vegetation and the changes produced in each pond by different seasons.

The swamp forests of Dehra Dun.—*By* A. DAS *and* P. C. KANJE LAL.

An oecological sketch indicating the chief characteristics of the forest vegetation of the Dun Swamps with a brief account of the chief factors constituting the environment.

The leaf-trace in Polypodiaceæ.—*By* G. S. CHEEMA.

1. Different methods of taking out Stele.
   (*a*) By simple teasing.
   (*b*) By the use of chemicals.
2. The structure and form of leaf-trace examined in :—

(*a*)	*Pteris longifolia* (L)	original.
(*b*)	*Pteris cretica* (L)	original.
(*c*)	*Pteris tremula*	Tansley.
(*d*)	*Adiantum tenerum* (Swartz)	original.
(*e*)	*Nephrodium sp.* (unidentified)	original.
(*f*)	*Syngramme fraxenia* (Don)	original.
(*g*)	*Adiantum capillis veneris* (L)	original.
(*h*)	*Coniopteris prolifera* (Roxb)	original.
(*i*)	*Cyathea Macarthuri*	Sinnot.

(*j*)	***Aspidium sp.*** (unidentified)	original.
(*k*)	***Nephrolepis acuta*** (Presl)	original.
(*l*)	***Pleopeltis-membranacea*** (Don) ..	original.

3. **Discussion :—**

(*a*) Reasons advanced in favour of the primitiveness of a single C-typed leaf-trace.

(*b*) Brief discussion as to the importance of the various types of leaf-trace in establishing the phylogentic relationship.

The flora of Ladak or Western Tibet.—*By* R. R. STEWART.

1. Ladak is a part of India with temperate conditions.
2. It has been visited by a surprisingly large number of explorers who have collected plants, but none of these has published a complete list.
3. There are three main elements in the flora of the country, the alpine, desert, and oasitic. The latter contains a large number of cosmopolitan weeds. Although the desert is poor in species yet it covers most of the area.
4. The lack of forests is due to the absence of water and so is the barrenness. Water is the only thing needed to produce good crops.
5. Of the provinces of Ladak which were visited Suru is most like Kashmir and Rupshu like Tibet. In the latter region 80 species were found above 15,000 feet.
6. Of the 140 species common to Ladak and the Eastern United States 85 were cosmopolitan weeds. Of the rest, part were water-loving forms and the rest wide-spread North Temperate types.
7. Continuous plant formation is very rare, as most of the area is an open desert formation with the individuals separate. Alpine meadows and continuous sods are rare.

Two new Madras Phalloids.—*By* M. O. PARTHASARATHY IYENGAR.

Two new Phalloids have been collected at Madras. The one is a species *Anthurus* not recorded before. Altogether fourteen specimens have been collected. These show very interesting variations in the arrangement of their arms. About three hundred specimens of the other Phalloid have been collected. All the plants are stalked and possessed a rudimentary disc over the mouth of the stem, which in a way resembles that of *Aseroe*. But they show a great deal of variation in the arrangement of the arms. Some possess free arms and then resemble an *Aseroe* of the *A. arachnoidea* kind. Some others possess a clathrate head and resemble *Simblum*. And some are midway between these two and possess a semiclathrate head. So this species shows characteristics belonging to two general genera, *Aseroe* and *Simblum*.

The gelatinous layer of the volva of both the above Phalloids, in the egg condition, is traversed by anastomosing thin plates of tissue as in *Clathrus concellatus*.

A new species of Schizonella.—*By* M. O. PARTHASARATHY *and* M. J. NARASIMHAN.

An abnormal growth resembling that of a witches' broom was found on *Vities Quadrangularis*, in Vandalur, near Madras. The disease was caused by a fungus, *Schizonella*, belonging to the Ustilagineæ. It is proposed by the authors to name it *Schizonella Colemani*.

Preliminary work on the root nodules of Casuarina.—*By* M. J. NARASIMHAN.

Root nodules were found in two species of Casuarina, C. ***Equisetifolia***, and *C. Glauca*. ***Abacillus***, which behaved in the same way as the nodule-organism of the Leguminoseae with regard to staining reactions and cultural characters, was found inhabiting the cells of the nodule. The amount of nitrogen fixed from the atmosphere by the bacillus, when grown in a medium poor in nitrogen, was estimated. Further work has yet to be done in the way of inoculating young casuarina seedlings to induce nodule formation.

Soil aeration results at Chandkhuri Farm in the Central Provinces.—*By* D. CLOUSTON.

The cultivator of the Central Provinces has for want of available supplies of manure had to starve his land, which has in consequence reached its maximum stage of impoverishment over large areas. Experimental work carried out on Government Farms has shown that in the rice tract san hemp can be used very economically as a rice manure when grown on the rabi area, i.e land under winter crops and applied to the rice fields before transplanting.

In the cotton tract nitrate of soda applied at the rate of about 60 lb. per acre as a top-dressing to cotton previously manured with a small dressing of cattle-dung has answered very well, and will probably be applied in large quantities by the leading land holders when the prices of artificials again become normal.

Relationship between systematic and economic Botany with special reference to medicinal plants.—*By* H. CARTER.

The Garden Flora of the Punjab.—*By* R. N. PARKER.

The Flora of the Central Punjab and the changes in it brought about by settlement and irrigation of the land. —*By* R. N. PARKER.

Morphology of Spines in *Citrus*.—*By* H M. CHIBBER.

Observations on structure of flower in *Bombax Malabaricum*.—*By* H. M. CHIBBER.

Section of Geology.

President—MR. E. S. PINFOLD, *B A.*, *F.G S.*, *Geologist to the Attock Oil Co., Ltd.*

Presidential Address.

THE CONDITIONS GOVERNING THE OCCURRENCE OF OIL IN THE PUNJAB.

At the outset may I say how much I appreciated the honour of being asked to preside over the Geological Section at this meeting of the Congress. I hesitated as to my fitness to fill such a responsible position, but I knew that I had been nominated by the Committee as a representative of the many geologists who are assisting commercial enterprise in this country, and as such I felt bound to accept nomination; for the Congress must find an important sphere of usefulness in providing the commercial scientists of India with an opportunity to submit their work for record and discussion; the lack of such opportunity before the Congress was instituted must have resulted in the loss to science of much valuable material which would have been of permanent interest.

I shall therefore make no excuse for the subject of my address; oil-prospecting is perhaps the most scientific branch of economic geology, and it is the scientific aspect of our work in the Punjab, which I wish to put before you.

History.

The oil-springs of the Punjab are so numerous and prolific that they must have been known and used from very early times. A bibliography of the references to them up to 1891 is given as an appendix to a paper by Holland in the *Records of the Geological Survey of India*, volume xxiv, page 96.

As far back as 1869 the Punjab Government made its first attempt to drill for oil, and a boring was put down by Fenner, of the P.W.D., at Jafar about five miles west of Fatehjang. There are no oil springs at Jafar and the geological evidence is unfavourable. The boring proved a failure, but this did not discourage the authorities and in the early seventies an oil-expert, F. W. Lyman, was commissioned to examine and report on all the then known oil localities. His results and recommendations were published in a long report dated 1879. I have been unable to find any record of what borings were put down on Lyman's recommendations; some wells were drilled at Chharat, five miles northwest of Fatehjang, and others, possibly, at Jaba in the Salt Range. The Chharat bores yielded a little oil, but the venture was a failure commercially.

In 1890 a more ambitious attempt to develop the oil localities was made by a syndicate in which the Townsend brothers had the main interest. Wells were drilled by Canadians at Sudkal, near Fatehjang, at Jaba, and at Alugud in the Trans-Indus Salt Range. Some of these wells were carried down to over 700 feet; small quantities of oil were obtained at each locality, but the project was eventually abandoned.

Still another failure has to be recorded. In 1912 the Indolex Syndicate imported a Swiss geologist, Professor Preisswerk, under the direction of the Austrian oil authority Professor Zuber of Lemberg. A well was drilled on a closely compressed limestone anticline near Golra junction during the cold season of 1913-14. The well was carried to about 1,000 feet but obtained only a few gallons of oil.

These early efforts, though invariably unsuccessful, furnish us with a catalogue of all the oil-seepages which were known and with a certain amount of valuable negative evidence: they indicate that we cannot expect oil in workable quantities in closely compressed limestone anticlines or in limestone monoclines, this notwithstanding the presence of numerous and prolific oil-seepages on such structures. In the Punjab, as in so many other oil regions, surface shows alone are entirely unreliable as indications of workable oil beneath the surface.

At about the same time that Lyman was examining and reporting on the oil-springs, A. B. Wynne of the Geological Survey was mapping the whole of this part of the Punjab and adjoining regions in the Northwest Frontier Province Wynne's work, done under great difficulties, was accurate and thorough, and his maps give a complete outline of the country in which the oil-springs occur. If the laws of oil occurrence had been as well understood in Wynne's time as they are now he would certainly have located the Khaur oil-field for, as far as the purely geological mapping is concerned, the structure is correctly shown on his map.[1]

It will be understood therefore that Wynne's work has been of great assistance to us in our search for oil in the Punjab. When the source-rock of the oil had been determined we were able by Wynne's map to leave large tracts of country as unpromising and to confine our attention to the more favourable areas. We were thus saved perhaps many months of useless labour.

Stratigraphy.

In examining any new region for oil the prospector has two main objects in view :—

1. To establish the stratigraphic horizons, if any, at which oil is likely to occur in commercial quantities.
2. To find large anticlinal or dome structures in which the oil-bearing horizons will occur within reach of the drill.

Frequently the two problems present themselves simultaneously, for oil-seepages often occur on structures which are favourable to the occurrence of oil in quantity. In the Punjab however, all the known seepages were on structures which were distinctly unfavourable or too doubtful to be recommended for testing. From the known seepages we were able to determine the oil-bearing horizons and the search for favourable structures came later.

The succession of the tertiary rocks in the northwest Punjab is as follows :—

Upper Siwalik.
Middle Siwalik.

---

[1] *Rec. Geol. Sur. Ind.*, Vol. x, p. 107 (1877)

Lower Siwalik { Chinji Beds.
{ Kamlial Beds.
Upper Murree.
Lower Murree.
Fatehjang Zone.

Unconformity.

Upper Chharat Stage { Nummulite Shales.
{ Limestones and Shales.
Lower Chharat Stage
Hill Limestones.

This succession is described in detail in another paper. It will be observed that the tertiary rocks can be divided into two groups, an upper group of entirely fresh-water origin equivalent approximately to the Oligocene, Miocene and Pliocene formations of Europe, and a lower group, mainly but not exclusively marine, of Eocene age. The upper group rests unconformably on the Lower

The massive hill limestones form the base of the tertiary system in the northern hills and are represented in the Salt Range by limestones of similar character but reduced thickness. In the Salt Range (and possibly at the western end of the Kala Chitta hills) these limestones are underlain by a thin shale series with some coal These shales contain *Cardita beaumonti* and are apparently of marine origin.

The sea in which the hill limestones were laid down must, at the end of this stage, have been cut off from the open ocean, for the uppermost beds of the limestones contain native sulphur and gypsum indicating brackish water conditions. The overlying beds—the Lower Chharat stage—contain fresh-water fossils (*Planorbis*) and mammalian remains which point definitely to the prevalence of fresh-water conditions during the time in which they were deposited. The next higher rocks—the Upper Chharat stage—mark a return to shallow water but open sea conditions; they are crowded with marine fossils and the upper beds are composed almost entirely of nummulites.

Deposition appears to have been continuous through all these stages; the changes from marine to brackish and, later, fresh-water conditions and then, rather more sharply, from fresh-water to marine appear to have been quite gradual and there is no trace of unconformity.

The nummulite shales are the highest known marine beds in this part of India. All the overlying rocks are shales, sandstones, or conglomerates forming a somewhat monotonous series of vast thickness. The shales are red or purple in colour and the sandstones vary from dark brown or purple to pure white and differ considerably in hardness. *Unio* and plant impressions are recorded from the lower horizons and vertebrate remains are abundant in definite zones. The total thickness of these rocks cannot be much less than 20,000 feet and throughout there is no evidence of any pronounced change in the conditions under which they were deposited. They are fluviatile and lacustrine deposits laid down by the fore-runners of the present rivers.

The unconformity between the fluvio-lacustrine series and the limestones is marked by pronounced transgression and overlap. In the northern sections, for example, along the foot-hills of the Kala Chitta range, all the stages shown in the above table are present; the Fatehjang zone of the basal murree beds rests on the nummulite shales. Ten miles further south, in the Khaire Murat ridge, the basal murree beds are still present, but the nummulite shales are missing and the murrees rest on the Lower Chharat stage. In the Salt Range the effects of the unconformity are much more pronounced. In that arm of the Salt Range which runs northwards into the Indus valley there are traces of the passage beds between the hill limestones and the Lower Chharat stage, and the highest beds of the limestones contain native sulphur; but elsewhere both the Upper and Lower Chharat stages are absent. The whole of the Upper and Lower Murrees are also missing and the basal zone of the Siwalik system rests directly on the massive nummulitic limestones.

The uplift which caused this unconformity appears to have had its greatest effect in the south, but as there is nowhere any marked discordance of dip or strike the movement must have been wide-spread and of continental type, unaccompanied by violent compression. The deposition of the Upper tertiary rocks was confined at the outset to a trough along the foot of and parallel to the beginnings of the Himalayan ranges in this region, and it was only in Siwalik times that the area of deposition spread southwards to beyond the line of the Salt Range.

Although the uplift of the Himalayas must have been in progress throughout Murree-Siwalik times, I have been unable to detect any unconformity in the Upper tertiary succession; deposition appears to have been quite continuous from the basal murree beds to the Upper Siwaliks and the various stages are distinguished only by slight changes in lithology and by their contained vertebrates.

Briefly, the sequence of events during tertiary times in this part of the Punjab has been :—

1. Shallow marine conditions during the deposition of the *Cardita beaumonti* shales and coals.
2. Open sea conditions whilst the massive limestones were formed.
3. The sea was cut off from the open ocean and became brackish and eventually fresh-water

4. The Lower tertiary fresh-water stage is followed by shallow marine conditions during the deposition of the Upper Chharat stage.
5. The region emerged finally from the sea and was subject to erosion.
6. The fluvio-lacustrine Upper tertiary rocks were laid down unconformably on the limestones, at first in a trough along the foot of the northern hills.
7. In Siwalik times the area of deposition spread southwards to beyond the line of the Salt Range.

The Oil-Seepages.

We can now pass to a consideration of the conditions under which the oil-seepages occur with a view to determining what horizons are likely to be oil-bearing.

The Foot-Hills Oil Zone.

There is a well-defined zone of seepages along the foot-hills of the Margala and Kala Chitta ranges which might be described as the "foot-hills oil-belt." This zone stretches continuously from the western flank of the Tret—murree synclinal—through the Rawalpindi and Attock districts and across the Indus into the Northwest Frontier Province.

The largest seepage in the Margala hills is at Rutta Hotar, eleven miles due north of Rawalpindi About ten miles to the southwest are the Golra seepages at the extreme eastern end of the Kala Chitta anticlinal, which is here a narrow steeply compressed limestone outcrop with Murree rocks to the north and south. In both these localities the stratigraphy is very clearly exposed, and the horizon of the oil-seepages is the same, namely, the passage beds between the hill limestones and the purple and variegated shales of the Lower Chharat stage. The oil is associated with sulphur, especially at Golra where crystals of native sulphur can be obtained from the oil-soaked limestones and shales. The immediately overlying beds contain abundant gypsum.

The Chharat fold, about twenty miles west of Golra, is the largest limestone anticline of the Kala Chitta foot-hills; it is steeply compressed and over-folded to the south. Seepages are numerous and not all at the same horizon. The main seepages are at the same horizon as the Golra seepages—the passage beds at the top of the hill limestones; but along the thrust-fault which forms the southern boundary of the limestone outcrop oil occurs in the nummulite shales and in the basal Murree beds. These seepages, however, are all close to the fault and only at that part of it where the oil-bearing passage beds are known to occur on the up-throw side and they appear to have derived their oil from the limestones by migration across the fault-plane.

Ten miles further west is the Chak Dalla locality. Here the oil seeps from chalky limestones with complex structure. The seepage is in the main hill range and the absence of the Chharat stages makes it difficult to define the exact horizon of the rocks in which the oil occurs.

Along the same general line, but across the Indus, another seepage occurs at Punnoba near the crest of a simple anticline in which about 1,000 feet of the upper limestones are exposed. The oil occurs in beds which overlie massive limestones and probably correspond with the passage beds elsewhere.

The only other seepages known in this zone are those at the eastern end of the Khaire Murat ridge about fourteen miles southwest of Rawalpindi. At the extreme eastern end of the limestone outcrop, where it crosses the Bussala stream, there is a small oil and gas seepage from a vertical rib of limestones between steeply dipping Murree beds; the Chharat stages are absent owing to unconformity. Another seepage occurs four miles further to the southwest near a hut known as Lundigar. This seepage appears to be at the crest of a small closely folded anticline of Murree rocks, but the structure is too complex to determine the horizon or how near the limestones may be to the surface; narrow limestone anticlines branch off from the main outcrop both to the north and south of the Khaire Murat ridge.

It will be observed that in the foot-hills oil-zone seepages occur wherever the limestones, and especially the upper limestones, are exposed. With few exceptions the oil seeps from the passage beds between the massive limestones and the Lower Chharat stage, that is, from rocks which were laid down during the brackish water phase of the Lower Tertiary sea. That this horizon is the true source of the oil is confirmed by negative evidence, for neither the hill limestones. the Chharat stages, nor the Murree rocks yield oil except in the few instances where there is reason to suppose that migration from the passage beds may have occurred. These rocks are exposed over a very wide area and in every variety of structure.

The Salt Range Seepages.

Another well-marked "oil-belt" or seepage zone occurs along the northern flank of the Salt Range.

At its western end the Salt Range turns abruptly northwards into the Indus valley, and along the eastern side of this arm the uppermost bed of the limestones contains native sulphur and oil. It is a chalky limestone similar and probably equivalent to the passage beds of northern sections. The largest seepage is at Jaba and this locality has yielded small quantities of oil for many years. The structure is monoclinal, the limestones dipping steeply beneath the Upper Tertiary sandstones and shales.

East of Sakesar, near the centre of the main range, there is a well-defined group of seepages; oil-shews, some of them amongst the most prolific in the Punjab, occur at intervals along the junction of the limestones and Siwalik rocks for a distance of nearly ten miles. The massive sandstones which here form the base of the Siwalik system give rise to precipitous cliffs and buttresses; seepages occur in the gorges at points where the limestones dip finally beneath the sandstones. The oil seeps from the basal conglomerate of the Siwalik rocks or from the uppermost bed of the limestones; in the latter instances the basal conglomerate is usully absent or is represented by the limestone bed in which the seepages occur, for there is some evidence that this bed is a re-cemented limestone conglomerate and probably of Siwalik age.

Twenty miles to the southwest, in the Sulgi glen near Amb, there is another prolific seepage in the very heart of the Salt Range. On examination this seepage proved to be a small patch of oil-soaked Siwalik rocks resting on limestones and let down by faulting into contact with the Carboniferous Limestone and Salt Marl. The Siwalik rocks contain vertebrates and they may be at a somewhat higher horizon than the sandstones of the more northern seepages. It is important to note that the only seepage known to occur in the Salt Range scarp is quite definitely in Siwalik rocks.

The group of seepages in this part of the Salt Range differs markedly from those previously described in that the oil occurs here in the basal beds of the Upper Tertiary series and not in the limestones. The explanation of these seepages is, I think, that the oil is derived originally from the same horizon which yields the oil at Jaba and the northern seepages, namely, the passage beds at the top of the massive limestones. This horizon does not outcrop at the surface owing to the unconformity, but it must occur further north beneath the Siwalik cover. The oil would then find its way to the surface by lateral migration along the conglomerates. Such lateral movement of oil up the dip through porous beds presents no great mechanical difficulties and is in accordance with the usually accepted laws of oil accumulation.

The basal Siwalik rocks are exposed in several other localities, for instance, in other parts of the Salt Range, in the Chirpar hills south of the Khaire Murat ridge, at Khaur and to the west of the road from Basal to Pindigheb, but except in the localities described they are quite barren of oil and contain no seepages. No seepages are known in the main mass of the Salt Range nummulitic limestones nor in the *Cardita beaumonti* shales.

If the above explanation of the Salt Range seepages is correct the Siwalik rocks at Amb must have accumulated their oil before being let down by faulting.

The Khaur Seepage.

The only other seepage which I know in the Punjab east of the Indus is that on the Khaur dome, forty-five miles south-west of Rawalpindi. It is a remarkable coincidence that this seepage escaped previous record by either Lyman or Wynne; I did not hear of it until actually camped on the anticline. It is the only seepage which occurs on an open dome structure obviously favourable for oil accumulation and storage

The seepage is a patch of oil-soaked sandstone about 100 square yards in extent with a smaller detached seepage about 200 yards to the east. The villagers obtained a small flow of oil from shallow scrapings, and we increased this yield to several tins daily by digging further into the sand. The seepage is near the crest of the anticline, but one mile down the westerly pitch from the dome summit.

The crest area at Khaur is floored by Upper Murree rocks of which about 300 feet are exposed: they are light grey sandstones and red shales. The individual beds are generally from 50 to 100 feet in thickness, but some sandstones attain larger development and the sandstone element predominates somewhat over the shale.

The area is now being tested by the Attock Oil Company and gives promise of becoming a workable oil-field.

To explain the presence of oil in the Upper Murree beds at Khaur is a problem of some difficulty. It seems improbable that the oil originated in the rocks in which it is now found for the Upper Murree beds do not usually contain seepages. Further, they are identical in lithological character with the Chinji beds of the Lower Siwalik system and differ only slightly from the whole succession of upper tertiary rocks. If the Upper Murrees contained original oil at Khaur we should expect the Chinji beds or other Upper Tertiary horizons to contain oil, but no such oil-sands or seepages are known.

I see no alternative but to conclude that the oil at Khaur originated in the rocks which are oil-bearing wherever they are exposed, namely, the passage beds between massive limestones and the Lower Chharat stage, and that the oil has attained its present position by upward migration through the Murree sandstones and shales. The greater part of the Murree system must be absent beneath the Khaur dome on account of the unconformity and overlap; it will be remembered that in the Salt Range the Murree system is completely absent from the succession.

There is little direct evidence for this view, but the results of the test-wells, up to date, accord reasonably well with what might have been expected if such upward migration had occurred.

The principal objections to such an hypothesis have been urged against every other case in which similar migration is believed to have taken place. They are:—

1. The mechanical difficulties against the passage of oil through considerable thicknesses of comparatively impervious shales.

2. The time factor, more especially the question as to how the oil was preserved in the source-rocks during the time they were exposed at the surface before the deposition of the reservoir rocks.

Too little is known of the exact conditions of oil movement and accumulation for us to be able to judge how much weight should be attached to such objections, and in the present state of our knowledge it cannot be said that they make the migration theory definitely impossible. It is now generally recognized by oil-geologists that such vertical migration through shales is possible and has taken place in almost every petroliferous region.

The most important evidence for the migration hypothesis is, of course, the conditions of oil occurrence elsewhere in the Punjab. In seven localities the seepages are in the passage beds at the top of the hill limestones; in another locality, the Salt Range, the oil finds access to the surface along the basal conglomerates of the Upper Tertiary rocks, having originated in the same mother-rock. It seems probable, therefore, that the oil at Khaur has its origin in the same source-rock and has attained its present position in the manner outlined above.

Origin of the Oil.

Although there is definite evidence to show that the oil has its origin at a particular horizon in the Lower Tertiary rocks, we are unable, as in so many other regions, to determine with certainty the material from which it was formed. The only direct evidence on this point is the presence of sulphur and gypsum in the source-rock and the paucity of fossils. The indications are that salt-lake or lagoon conditions, accompanied by some concentration of the salt water by evaporation, played an important if not essential part in the process of oil formation.

The most abundant fossils in the Lower Tertiary rocks are nummulites, and some beds of considerable thickness are made up entirely of nummulite tests. Such beds, however, are not oil-bearing. Neither the massive nummulitic limestones nor the nummulite shales contain original oil, and it is improbable that nummulites contributed in any way to the formation of the oil.

The rocks in which the oil occurs contain a few scattered nummulites but are otherwise barren. It seems probable that the oil was derived from the decomposition of soft-bodied organisms, possibly sea-weeds, under the peculiar inland-sea conditions described above.

Comparison with other Areas.

The petroliferous rocks of Assam and Burma are quite different in character from those of the Punjab. In those regions the oil is distributed through a vast thickness of sandstones and shales which give little or no indication of any change in the conditions under which they were deposited. Oil seepages occur at various horizons throughout some 20,000 feet of such rocks in Burma, and no geologist has as yet even suggested that any horizon or horizons should be regarded as the primary source-rock of the oil

A very striking parallel can be drawn between the oil occurrences of India and those of the Carpathian oil-fields. In Galicia and northern Rumania the oil occurs in the "Flysch," a monotonous series of sandstones, shales, and conglomerates, which must be similar in lithology to the oil-bearing Pegu rocks of Burma and Assam. Professor Zuber claims that in the Flysch zone there is a reciprocal relation between the occurrences of oil and coal; he suggests that the oil has originated from the decomposition of vegetable matter which under slightly different circumstances would have formed coal.[1] Dr. Pascoe has put forward an exactly similar hypothesis to explain the relation between oil and coal occurrences in Burma[2] and Assam.[3]

The conditions in the central Rumanian fields are entirely different. Here the origin of the oil is attributed by Professor Mrazec to the "Miocène Salifère," the final lagoon facies of the deposits laid down in the miocene Mediterranean Sea. The large productive fields, however, obtain their oil from Pliocene fresh-water deposits. These rocks are devoid of oil except when in contact with the Miocène Salifère and Mrazec claims that the oil which they contain has been derived from the miocene mother-rock by migration; such migration has taken place usually across great overthrust faults. In some cases (Campêni and Tetçani) he attributes the high grade of the oil to fractional filtration during upward migration from a source at great depth.[4]

In India the Assam and Burma fields repeat the Flysch conditions of Galicia and northern Rumania, and the Punjab occurrences those of central Rumania.

Another interesting parallel to the conditions of oil occurrence in the Punjab is furnished by certain of the western

---

[1] *Compte-Rendu, IIIème Congrès Int. du Pétrole.* T. II, p. 139 (1910).

[2] *Mem. Geol. Sur. India*, XL, pt. 1, p. 237 (1912).

[3] *Mem. Geol. Sur. India*, XL, pt. 2, p. 318 (1914).

[4] *Compte-Rendu, IIIème Congrès Int. du Pétrole*, T. I, p. 145 (1910).

American fields. In these fields it is suggested that the oil was formed originally in shales of eocene age, but production in the large fields is obtained from the overlying miocene. The interesting feature here is that the miocene rocks rest with unconformity on the eocene and overlap allows each stage of the miocene to rest in turn upon the eocene source-rocks. Oil is obtained from various horizons in the miocene wherever suitable reservoir rocks rest in contact with the eocene shales or are sufficiently near them for migration to have been possible.

The occurrence of oil at several different horizons which are barren except when within reach of a common source-rock is strong evidence that migration has taken place; in the Punjab, for example, oil occurs in the basal Murree rocks at Chharat, the oil at Khaur is in Upper Murree rocks, and the Salt Range seepages are in the basal conglomerates of the Lower Siwalik system, and it is only when these rocks are near to or in contact with the limestones that they contain any trace of oil.

The Attock Oil Company is continuing the exploration of the Khaur field and is drilling a test-well on another area eleven miles to the southwest. The Burma Oil Company is testing the Meyal anticline twenty miles west of Khaur. Our knowledge of the conditions of oil formation, accumulation, and storage, in the Punjab and elsewhere, is rapidly increasing, and it remains to be seen whether the migration hypothesis will stand the test of the additional evidence as it comes to hand. All that is claimed for it is, that, subject to the objections cited above, it affords a working explanation of the facts of oil occurrence in the Punjab so far as they are known at present.

Notes on structure and stratigraphy in the North-West Punjab.—*By* E. S. PINFOLD.

After a brief descripton of previous work in the Attock and Rawalpindi districts and adjoining regions the author describes the succession of structural zones between the complex folding of the northern limestone hills and the modified "block structure" of the Salt Range. The section is of special interest on account of its marked resemblance to the supposed section of the "Gangetic Trough."

The stratigraphy is described in detail; the Subathu beds are subdivided and a correlation is suggested with the Hazara and Baluchistan successions.

Note on the Aquamarine mines of Daso on the Braldu river, Shigar valley, Baltistan.—*By* C. S. MIDDLEMISS *and* JOTI PARSHAD.

The authors describe, with photographs, plan, view and sections, the general, physical and geological conditions of the mine area, the history of the discovery of the gems, their size, crystal form and colour, their relative abundance in the pegmatite matrix. and the actual results in paying gem-material of a practical mining test made during 10 days' operations. The investigations showed the amount of the aquamarine-

bearing pegmatite at the mines and in the neighbourhood to be very large and practically inexhaustible. The data furnished by the working test showed that, employing 25 labourers for 10 days at a cost of Rs. 178 for wages, explosive and charcoal, there were extracted 136 tolas weight of A 1 quality, large and clear, 130 tolas of 1st quality, both these being suitable for cutting into facetted gems; and 180 tolas of 2nd quality, translucent and suitable for cutting *encabochon* into brooches, buttons, etc.

The first two qualities are of good water and delicate, though pale, tints, and are valued at 6 annas and 2 annas a carat, respectively, in the rough uncut state. The tola being reckoned at 58 carats, the results altogether show a large margin of valuable material realizable for defraying supervision charges, transport costs and as profit, sufficient to promise well for the future of the mines.

On the discovery of Upper Palæozoic Fossils in the Krol beds of the Simla region.—*By* E. VREDENBURG *and* H. C. DAS GUPTA.

Much difficulty was for a long time experienced in classifying and correlating the pre-tertiary sedimentary formations of the southern Himalaya on account of their generally unfossiliferous condition. A satisfactory clue to the sequence was apparently afforded by R. D. Oldham's researches establishing the glacial character of the Blaini conglomerate and its probable identity with the Talchir beds and the Salt Range boulder bed of upper carboniferous age. Owing to the persistent absence of fossils, doubts have latterly been entertained as to the correctness of this identification, and the unfossiliferous beds of the Southern Himalaya have been regarded as equivalent to the unfossiliferous precambrian beds of the Peninsula. Consequently, it has generally been supposed, of late, that the Blaini boulder-bed may be much older than the Talchir. Mr. Gupta's discovery of upper palæozoic fossils in the Krol beds, amongst which is a *Chonetes* of the group *laevis*, finally confirms Oldham's correlation.

Considerations regarding a possible relationship between the Charnockites and the Dharwars.—*By* E. VREDENBURG.

In this paper attention is drawn to the possibility of regarding the charnockites as metamorphosed representatives of the igneous members of the Dharwars. The latter are known, in some instances, to have been transformed into granulites resembling the charnockites, while the charnockites in some of their outcrops exhibit a distinctly bedded structure and are associated with certain rocks characteristic of the Dharwar system such as the banded iron ores.

The distribution of the charnockite and Dharwar outcrops, excluding one another over large areas, and never intermingled, suggests that they may be two different metamorphic facies of a single formation. The frequent association of charnockites with the metamorphosed sediments known as Khondalites (quartz-sillimanite-schists) also recalls the interbedded volcanics and sedimentaries observed in many typical outcrops of the Dharwars. It is therefore suggested that the Khondalites may represent metamorphosed Dharwar sedimentaries in the same way as the charnockites are thought to represent the Dharwar volcanics.

Suggestions regarding the mechanism of the "charriages." —*By* E. VREDENBURG.

The large scale displacements of vast slices of rocks across great horizontal distances which characterize the structure of the Alps and other European mountain ranges, but have not yet been recognized with certainty in India, are difficult to account for as the direct result of tangential thrusts on account of the frequently feeble degree of crushing and corrugation which the displaced rocks have been subjected to.

The frequently plunging disposition of their contact with the substratum has suggested the notion that their elevation was originally due entirely to an upward plateau-like bulging of the surface, and that the horizontal displacement is due to a sliding down the slope of the upraised area, as the direct effect of gravitation, in a manner comparable to the movement of a landslip or of a glacier.

Tin ores in Tavoy.—*By* J. Coggin Brown.

The author points out that the importance of obtaining supplies of wolfram at the high price prevailing for that mineral have led to its exploitation in Tavoy to the exclusion of other useful minerals, such as tin. The latter mineral is widely distributed in the district and is already being won by dredging in one valley; other promising areas are referred to and the association of the ore is briefly discussed.

On the distinct sedimentary origin of some quartzites of Mysore.—*By* V. S. Sambasiva Iyer.

The author describes the occurrence, near Kondli, Tumkur district, Mysore State, of some highly quartzose rocks containing sericite and sericitising felspars which show distinctly bedded structures and well defined elastic textures and are clearly and conclusively ripple-marked, exactly like the markings on typical specimens of ripple-marked quartzites; while their microsections are very similar to those of ripple-marked quartzites of Baroda or to those of typical quartzites of Dr. Krantz's collection, and concludes that distinct metamorphosed arenaceous sediments preserving their typical textures or structures do occur in Mysore, though the exposure noted at present is a small one. The paper was illustrated by specimens, photos, micro-sections and map.

Note on some Dinosaurian remains recently discovered in the Lameta beds at Jubbulpore.—*By* C. A. Matley.

The author recently discovered a number of vertebrate bones, some of very large size, in beds of the Lameta formation at Jubbulpore. The fossils were found at two horizons on the western slope of the hill known as Bara Simla, on the estate of the Gun Carriage Factory. They have been presented to the Geological Survey of India and are now being studied by Mr. G. de P. Cotter and the author.

The largest remains occurred as scattered bones in a red and green marly clay about 4 feet above the lower limestone of Bara Simla Hill. Among the specimens obtained are three vertebrae (two procoelous and one amphicoelous), a right humerus 54 inches long, an incomplete scapula (?) 48 inches in length, a radus (?) 28 inches long, a portion of another radius, some ribs and a number of fragments. They belong to a gigantic herbivorous dinosaur, probably 50 feet or more in length, and are provisionally assigned to *Titanosaurus indicus*, a genus and species described by Lydekker on the evidence of two vertebrae and an incomplete femur found in this neighbourhood about half a century ago.

A portion of the skeleton of another and smaller reptile was discovered at a slightly lower horizon about 50 yards away, embedded in a soft greenish sandstone at the base of the lower limestone mentioned above. Many of the bones are broken and crushed or distorted by pressure, and much work has yet to be done in cementing the broken fragments and removing the matrix from the more delicate bones before their study can be satisfactorily undertaken The specimens include several vertebrae and ribs, some limb bones, various bones of the feet (including two ungual phalanges) and a tooth. The limb bones are hollow and the skeleton generally is of lighter construction than that of *T. indicus*. The reptile was apparently a carnivorous dinosaur of the sub-order *Theropoda*.

The Geotectonics of the Tertiary Irrawaddy Basin.—*By* G. DE P COTTER.

It has been found necessary through recent field work in Minbu and Pakokku districts to modify our previous ideas of the tertiary history of Burma The author believes that there is no unconformity except of an entirely local character between the Pegus and Irrawadies of the Irrawaddy basin. The supposed unconformities of Yanangyat and Minbu are partly to be explained as missing beds cut out by fold-faults. The presence of a basal eocene conglomerate along the east foot of the Yoma shows that this barrier existed in lower eocene times The Yoma barrier formed a continually rising geoanticline, and the Irrawaddy basin a continually sinking geosyncline, but as time went on, the subsiding area shifted southwards The sea retreated steadily to the south, the sediments becoming both horizontally northwards and vertically upwards more and more of a fluviatile type The occurrence of red earth beds signifies land conditions temporarily established through silting, but does not necessarily mean upheaval. Each bed tails off into red earth *facies*, and in certain areas it is suggested that we have mapped as one bed the red earth *facies* of several beds which are changing their *facies*. The boundary thus obtained would appear to show overlap.

There is evidence of pleistocene and recent upheaval in the Irrawaddy Basin. The plateau gravels are old raised river gravels, and the large size of their pebbles show that the rivers formerly had steeper gradients. The streams in parts of Minbu are now cutting through the recent alluvium: this indicates recent upheaval

The Lamellibranchiata of the Eocene of Burma.—*By* G. DE P. COTTER.

The fauna is a meagre one, consisting of less than 20 species Of these, one is identical with a form from the upper eocene of Java and Borneo, and one identical with a Khirthar species from India The remainder appear to be either new species or at least new varieties, but their relationships are with the upper eocene of other countries. Detailed descriptions of each species are given. The author wishes to thank Mr E. Vredenburg for kindly assisting him with his advice in the preparation of this paper.

Stegodon Ganesa in the Mid Siwaliks of Jammu —*By* D. N WADIA.

A fossilised tusk of an extinct elephant (*Stegodon*) was discovered by the writer in the Mid Siwalik strata of the Jammu hills

A brief description of the Siwaliks of Jammu, the position of the fossil. The characters of the skull, the upper jaw in which the tusk was implanted *in situ* and the molars. Measurements and description, the incisor or tusk, its detailed measurements Fossil ivory, its characters. The specific position of the fossil; its stratigraphic position. Microscopic sections; pieces of polished fossil ivory.

Geology of Hyderabad (Deccan).—*By* K. A. K. HALLOWES.

Proceedings of Ordinary General Meetings, 1918.

FEBRUARY, 1918.

The Monthly General Meeting of the Society was held on Wednesday, the 6th February, 1918. at 9-15 P.M.

The following fourteen persons were balloted for as Ordinary members .—

Mr. S. N. Ray, B.A. (Cantab), Indian Civil Service, Sub-Divisional Officer, Kesoregunge, Mymensingh, proposed by Dr. B. L. Chaudhuri, seconded by Mr. K. C. De; *Mr. J. N. Ray*, Barrister-at-Law, High Court, Calcutta, proposed by Dr. B. L Chaudhuri seconded by Mr. Gopal Das Chaudhuri; *Mr. Kumar Arun Chundra Singha*, M.A., Landholder, Susang, Mymensingh, proposed by Dr. B. L. Chaudhuri, seconded by Dr. Satis Chandra Vidyabhusana; *Dr. Ekendra Nath Ghosh*, M.D., M.Sc, Prof. of Biology, Medical College, Calcutta, proposed by Dr. N. Annandale, seconded by Dr. F. H Gravely: *Mr. Narendra Nath Banerjee*, Superintendent of Telegraphs. Ramna, Dacca, proposed by Hon. Justice Sir Asutosh Mukhopadhyaya, Kt, seconded by Dr. Satis Chandra Vidyabhusana. *Mr W. A. Sutherland*, late Superintendent, Railway Mail Service, Rajputana Dn., 22. Elliott Lane. Calcutta, proposed by The Hon. Justice Sir Asutosh Mukhopadhyaya, Kt., seconded by Dr. F. H. Gravely; *Babu Ramani Kanta Kavyavyakarantirtha*, Prof. of Sanskrit, P.O Adamdighi (Bogra). proposed by The Hon Justice Sir Asutosh Mukhopadhyaya, Kt., seconded by Dr. F. H. Gravely: *Babu Pramatha Nath Banerjee*, Asst. Professor of Economics Calcutta University, proposed by the Hon. Justice Sir Asutosh Mukhopadhyaya, Kt., seconded by Dr. F. H. Gravely; *Babu Sisir Kumar Maitra*, Principal, Indian Institute of Philosophy, Amalner, proposed by The Hon. Justice Sir Asutosh Mukhopadhyaya, Kt., seconded by Dr. Satis Chandra Vidyabhusana; *Rev. Sramana Wan Hui*, Chinese Buddhist Monk, 22, Khairu Lane, Calcutta. proposed by Mahamahopadhyaya Haraprasad Shastri, seconded by Dr. F. H. Gravely; *Mr. Johan van Manen*, Balaclava Hotel, Ghoom, proposed by Dr. N Annandale, seconded by Mr. S. W. Kemp; *Mr. S. C. Bagchi*, Barrister-at-Law, Phukanvari Tea Estate, Dibrugarh, proposed by Dr. B. L. Chaudhuri, seconded by Mr. Gopal Das Chaudhuri: *Shaikh Laiq Ahmad Ansari*, Translator and Author, Historical Research Office, Bhopal State, proposed by the Hon. Dr. A. Al-Ma'mun Suhrawardy, seconded by Dr F. H. Gravely; *Bada Kaji Marichi*

Man Singh, 38, Khichapokhari, Kathmandu, Nepal, proposed by Mahamahopadhyaya Haraprasad Shastri, seconded by Dr. F. H. Gravely.

The General Secretary reported that Mr. W. H. Phelps, and Mr. C. J. Brown, Ordinary members, and Dr. Ekendra Nath Ghosh and Pandit Marichi Man Singh, Associate members, had expressed a desire to withdraw from the Society.

The General Secretary also reported the death of Mr. Charles Russell, M.A., Mr. Framjee Thanawala, and Dr. W. C. Hossack, Ordinary members of the Society

The President called attention to the following exhibitions :—

1. Four manuscripts and a Ceylonese Chaitya.—Dr. Satis Chandra Vidyabhusana
2. Buddhist manuscript of ancient date —Prof. D. R. Bhandarkar.
3. Miscellaneous exhibits from the Imperial Library.—Mr. J. A Chapman.
4. Twelve Moslem manuscripts.—The Hon. Dr. A. Suhrawardy
5. Manuscripts belonging to Hon. Mr. W. A. Ironside.—Mahamahopadhyaya Haraprasad Shastri.
6. Albums of photographs of Indian antiquities.—From the Society's Library
    - A. Sanchi Topes, Vol. I.
    - B. Karli Caves.
    - C. Bhubanesvar Temples.
7. Meteorites and other geological specimens.—The Geological Survey of India.
8. Some essential oils of medicinal value.—Dr. H. G. Carter.
9. Drawings and photographs of cases of leprosy before and after treatment with gynocardate of soda.—Lt.-Col. Sir Leonard Rogers.
10. Specimens from the ethnological gallery, Indian Museum, illustrating Shamanism or exorcising of harmful spirits as practised in the Nicobar Islands,—Dr. A. Meerwarth.
11. Dieng Shat pylieng (egg-breaking board used by the Khasias as an augury) —Prof. Hem Chandra Das-Gupta.
12. Primitive weighing beams of the bismer type.—Dr. N. Annandale.

13. Shells of pond-snails from the Inlé lake-system in the Southern Shan States.—Dr. N. Annandale.
14. Museum cases illustrating the development of Indian Insects.—Dr. F. H Gravely
15. Specimens of an albino strain of the mulberry silkworm. —By Miss. M. L. Cleghorn.
16. Living specimen of a rare Indian toad, *Kaloula pulchra*, captured in Calcutta about 2 years ago.—Miss. M. L. Cleghorn.
17. Compound pendulums.—Mr. H. G. Graves.

The President announced that there would be no meeting of the Medical Section during this month.

◆

APRIL, 1918.

The Monthly General Meeting of the Society was held on Wednesday, the 3rd April, 1918, at 9-15 P.M

N ANNANDALE, Esq., D.Sc., C.M.Z.S., F.L.S., F.A.S.B., Vice-President, in the chair.

The following members were present:—

Maulavi Abdul Wali, Mr. H. G. Graves, Mr. S. W. Kemp, Shaikh Laiq Ahmad Ansari, Dr. Satis Chandra Vidyabhusana, Mr. E. Vredenburg.

Visitor:—Dr M. B. Soparkar.

The minutes of the December Ordinary Monthly Meeting, the Annual Meeting, and the February Ordinary Monthly Meeting were read and confirmed.

One hundred and nine presentations were announced.

The General Secretary reported that Mr. G. R Kaye, Prof Kiran Sankar Roy, Hon. Mr. E. B. H. Panton, I.C.S., Mr. C. Gilbert Rogers and Babu Harendra Kumar Mookerjee have expressed a desire to withdraw from the Society.

The Chairman announced that in accordance with Rule 38 of the Society's Rules, the names of the following two members had been posted as defaulting members since the last meeting, and their names have now been removed from the member-list:

Khaza Ahmed Amin Ansary, Lucknow ..	Rs. 60
Dr. E. H. Hankin, Agra.	„ 72

The Chairman also announced (1) that Dr. W. A. K. Christie had been appointed Honorary General Secretary in the place of

Dr. F. H. Gravely, resigned, (2) that Dr. P. C. Ray had been appointed Physical Science Secretary in the place of Dr. Christie, (3) that Prof. D. R. Bhandarkar had been appointed a member of Council.

The General Secretary read the names of the following gentlemen who have been appointed to serve on the various Committees during 1918 :—

Finance Committee.

Dr. N. Annandale, Mahamahopadhyaya Haraprasad Shastri, C.I.E., Dr. Satis Chandra Vidyabhusana, Hon. Librarian (*ex officio*).

Library Committee.

Mahamahopadhyaya Haraprasad Shastri, C.I.E., J. A. Chapman, Esq., Prof. D. R. Bhandarkar, Hon. Librarian (*ex officio*), Library Regulation 22), Anthropological Secretary, Biological Secretary, Physical Science Secretary the two Philological Secretaries, Medical Secretary.

Philological Committee.

The Hon. Dr. Abdulla Al-Ma'mun Suhrawardy, Dr. Satis Chandra Vidyabhusana, The Hon. Justice Sir Asutosh Mukhopadhyaya, Kt., Mahamahopadhyaya Haraprasad Shastri, Babu Nilmani Chakravarti, A. H. Harley Esq., Aga Muhamad Kazim Shirazi, O. F. Jenkins, Esq. Prof. D. R. Bhandarker.

Hon. Numismatist.

Lieut.-Col. H. Nevill, I.C.S

Hon. Joint Secretaries, Science Congress.

Dr. J. L. Simonsen.
Prof. P. S. Macmahon.

The following nine gentlemen were balloted for as ordinary members :—

Lieut.-Col. F. Wall, C.M.G., I.M.S., c/o Messrs. H. S. King & Co., 9, Pall Mall, London, proposed by Dr. N. Annandale, seconded by Mr. S. W. Kemp; *Mr. Ram Nath Khanna*, c/o Mr. B. Dhani Rani, Gurgaon, proposed by Dr. Satis Chandra Vidyabhusana, seconded by Dr. F. H. Gravely: *Mr R. J. Pocock,* Director Nizamiah Observatory, H.E.H. the Nizam's Government, Begumpet, Deccan, proposed by Mr. R D. Mehta, C I.E., seconded by Dr. F. H. Gravely; *Maharaja Kumar Bhupendra Narayan Sinha*, B.A., Zemindar, 10, Hungerford Street, Calcutta, proposed by Dr. B. L. Chaudhuri, seconded by Dr. K. S. Ray; *Mr Herbert C. Robinson* ; Director of Museums and Fisheries, F.M.S., Kuala Lumpur, proposed bv Dr. N. Annandale seconded by Mr. S. W. Kemp; *Mr.*

Baini Prasad, Superintendent of Fisheries, Bengal, Bihar and Orissa, Indian Museum, Calcutta, proposed by Dr. N. Annandale, seconded by Mr. S. W. Kemp; *The Hon. Mr. W. A. Ironside*, Messrs. Bird & Co., 2, Woodburn Park, proposed by Lieut.-Col. Sir L. Rogers, Kt., seconded by Lieut.-Col. W. D. Sutherland; *Mr. Jagannath Das Ratnakar*, B.A., Private Secretary to Srimati Maharani of Ajodhya, The Rajsadan, Ajodhya, proposed by Raja Prithwipal Singh, seconded by Lala Sita Ram; *Dewan Bahadur Balabhdass*, Banker and Zemindar, Jubbulpur, proposed by Mr. E. Vredenburg, seconded by Dr W. A. K. Christie.

The following papers were read .—

1. *Zoological Results of a Tour in the Far East. Brackish Water Polyclads.—By* Dr. T. KABURAKI.

This paper has been published in the *Memoirs*.

2. *Zoological Results of a Tour in the Far East. Mollusca of the Tai-Hu.—By* DR. N. ANNANDALE.

This paper will be published in the *Memoirs*

3. *Zoological Results of a Tour in the Far East Sponges.—By* DR. N. ANNANDALE.

This paper has been published in the *Memoirs*.

4. *Révision des Champignons appartenant au Genre* Nocardia.—*Par le* CAPITAINE FROILANO DE MELLO *et* DR. J F. ST. ANTONIO FERNANDES. *Communicated by* DR N. ANNANDALE.

This paper will be published in the *Memoirs*

5. *Preliminary note on the Flora of the Anaimalais—By* C. FISCHER. *Communicated By* DR. J. L. SIMONSEN

6. *The Burmese Sesamum Varieties. Notes on their Variation and Growth.—By* A. McKERRAL. *Communicated By* DR. J. L. SIMONSEN.

7. *The Poet Shaikh Mufakhkhar-al-dīn Āẕarī of Isfarāyīn.—By* LT.-COLONEL T. W. HAIG, C.M.G.

This paper will be published in the *Journal*.

The Chairman announced that there would be no adjourned meeting of the Medical Section this month.

◆

MAY, 1918.

The Monthly General Meeting of the Society was held on Wednesday, the 1st May, 1918. at 9-15 P.M.

N. ANNANDALE, Esq., D.Sc., C.M.Z.S., F.L.S., F.A.S.B., Vice-President, in the chair.

The following members were present;—

Moulavi Abdul Wali, Anagarika Dharmapala, Dr. L. L. Fermor, Rev. Sramana Wan Hui, Mr. C H. Kesteven, Rev. K. Oka, Dr. Satis Chandra Vidyabhusana.

The minutes of the last meeting were read and confirmed.

Thirty-four presentations were announced.

The General Secretary reported that Mr. P. Chaudhuri had expressed a desire to withdraw from the Society.

The General Secretary also reported the death of Dr. Arthur Venis, an ordinary member of the Society.

The Chairman announced that Babu Panchanan Neogy, Rajshahi, being largely in arrears of his subscription, had been declared a defaulter and that his name would be posted in accordance with Rule 38.

The following papers were read :—

1. *A Short Account of the Wandering Teachers at the Time of Buddha* —*By* BIMALA CHARAN LAW.

2. *Minor Tibetan Texts, I. The Song of the Eastern Snow Mountain.*—*By* JOHAN VAN MANEN.

This paper will be published in the *Bibliotheca Indica*.

The Chairman announced that there would be no adjourned meeting of the Medical Section this month.

◆

JUNE, 1918.

The Monthly General Meeting of the Society was held on Wednesday, the 5th June, 1918, at 9-15 P.M.

N. ANNANDALE, Esq., D.Sc., C.M.Z.S., F.L.S., F.A.S.B., Vice-President, in the chair.

The following members were present :—

Dr. P. J. Bruhl, Dr. L. L. Fermor, Rev. E. Francotte, S.J., Shaikh Laiq Ahmad Ansari, Dr. Baini Prasad, Dr. K. S. Ray, Mr. E. Vredenburg.

Visitor :—Mr. W. Taylor

The minutes of the last meeting were read and confirmed.

Twenty-three presentations were announced.

The General Secretary reported the death of Maharaj Ranjit Singh, an ordinary member of the Society.

The Chairman announced that in accordance with Rule 38, the name of Babu Panchanan Neogy, Rajshahi, had been posted as a defaulting member since the last meeting and his name had now been removed from the member list.

The Chairman also announced that the name of Capt. J. D. Sandes, I.M.S., had been removed from the list of members under rule 40.

The following four gentlemen were balloted for as ordinary members :—

Mr. W. H. Lees, I.C.S., Commissioner, Burdwan Division, Chinsurah, proposed by Hon. Mr. F. J. Monahan, seconded by Dr. N. Annandale; *Major W. L. Campbell*, I.A., Political Officer in Sikkim The Residency, Gangtok, Sikkim, proposed by Dr. W. A. K. Christie, seconded by Mr. S. W. Kemp: *Mr. Haranandan Panday*, M.A., Assistant Superintendent, Archaeological Survey, Eastern Circle, Patna, proposed by Prof. D. R. Bhandarkar, seconded by Dr Satis Chandra Vidyabhusana; *Mr P. Gangooly*, Lecturer in Hindu Astronomy and Mathematics, Calcutta University, 6 Mullen Street, Calcutta, proposed by Dr N. Annandale, seconded by Dr. B. L Chaudhuri.

The reading of the following papers was postponed :—

1. The Isolation of Porphyroxine. By Jitendra Nath Rakshit. Communicated by Dr. P. C. Ray.
2. On a new Theorem in Elasticity. By M. N. Saha.
3. On the Pressure of Light. By M. N. Saha and S. Chakravarti.
4. The Geotectonics of the Tertiary Irrawaddy Basin. By G. de P. Cotter.

The Chairman announced that there would be no adjourned meeting of the Medical Section this month.

◆

JULY, 1918.

The Monthly General Meeting of the Society was held on Wednesday, the 3rd July, 1918, at 9-15 P.M.

N. ANNANDALE, Esq., D.Sc., C.M.Z.S., F.L.S., F.A.S.B., Vice-President, in the chair.

The following members were present :—

Maulavi Abdul Wali, Dr. P. J. Bruhl, Mr. Hem Chandra Das-Gupta, Rev. E. Fancotte, S.J., Mr. H. G. Graves, Babu Meghnad Saha, Dr. Satis Chandra Vidyabhusana, Mr E. Vredenburg.

Visitors :—Babu Narayandas Basu, Babu Sudhakar Chakravarti, Mr. J. J. Campos, Mr. J. W. Gregory, Dr. D. B. O. Meek, Mr. G. B. Williams.

The minutes of the last meeting were read and confirmed.

Twenty-two presentations were announced.

The General Secretary reported that Lieut.-Col. C. R. M. Green, I.M.S., and Mr. H. P. Watts, M.A., had expressed a desire to withdraw from the Society.

The following six gentlemen were balloted for as ordinary members.

Mr. Jnanendra Mohan Ghose, Barrister-at-Law, 1, Harington Street, Calcutta, proposed by Dr B. L. Chaudhuri, seconded by Prof. Hem Chandra Das Gupta; *Babu Charu Chandra Bose*, M.B., Asst. Surgeon, Medical College, 52/2, Mirzapur Street, Calcutta, proposed by Dr. K. S. Ray, seconded by Dr. N. Annandale; *Dr. B. C. Roy*, M.D., F.R.C.S., M.R.C.P (London), Lecturer, Campbell Medical School, 36, Wellington Street, Calcutta, proposed by Dr. K. S. Ray, seconded by Dr. N. Annandale; *Mr. Tarosuke Oka*, Merchant, No. 66 Handa, Kamfemura, Miyeken, Japan, proposed by Rev. K. Oka, seconded by Dr. Satis Chandra Vidyabhusana; *Mr. Kazunobu Kanokogi*, Prof. of Philosophy, The Keio University, Lhasa Villa, Darjeeling, proposed by Rev. K. Oka, seconded by Dr. Satis Chandra Vidyabhusana; *Mr. J. J. Campos*, Journalist, Editor, "The Century Review," 12, Wellesley Street Calcutta, proposed by Mr. E. Vredenburg, seconded by Dr. H. G. Carter.

Mr. E. Vredenburg made the following exhibitions :—

1. A specimen of *Alectryonia Townsendi* Sow., a rare deep-sea form of oyster from the Arabian sea.
2. Concretionary calcareous nodules from Ormara, on the Makran coast, containing fossil specimens of *Dolium* and of other shells.

The following papers were read :—

1. *The Isolation of Porphyroxine.—By* JITENDRA NATH RAKSHIT. *Communicated by* DR. P. C. RAY.

2. *On a New Theorem in Elasticity.—By* M. N. SAHA.

3. *On the Pressure of Light.*—M. N. SAHA *and* S. CHAKRAVARTI.

4. *The Geotectonics of the Tertiary Irrawaddy Basin.—By* G. de P. COTTER.

5. *Considerations regarding a possible relationship between the Charnockites and the Dharwars.—By* E. VREDENBURG.

6. *The Sources of the Akbarnāma.—By* H. BEVERIDGE.

7. *Note on the occurrence of* Dolium variegatum *Lamarck at Maskat, with considerations on its geographical distribution at the present day and in former geological times.—By* E. VREDENBURG.

Papers Nos. 5 to 7 will be published in the *Journal.*

The Chairman announced that there would be no adjourned meeting of the Medical Section this month.

◇

AUGUST, 1918.

The Monthly General Meeting of the Society was held on Wednesday, the 7th August, 1918, at 9-15 P.M.

H H. HAYDEN, Esq., C.I.E., DSc., B.A., B.A.I. F.R.S., F.A.S B., F.G.S., President, in the chair.

The following members were present :—

Maulavi Abdul Wali, Dr. N. Annandale, Dr. W. A. K. Christie, Mr. H. G. Graves, Mr. S. W Kemp, Dr. B. Prasad, Hon. Dr. A. Suhrawardy, Mr. G. H. Tipper, Dr. Satis Chandra Vidyabhusana.

Visitors :—Dr. D. B. O. Meek, Mr. J. W. Gregory.

The minutes of the last meeting were read and confirmed.

Twenty-three presentations were announced.

The General Secretary reported the death of Syed Abdulla-ul-Musawy of Bohar, Burdwan, an ordinary member of the Society.

The President announced that Babu Vireshwar Bhattacharjee of Navadipa and Maulavi Q. Fazli Haque of Lahore being largely in arrears had been declared defaulters and that their names would be posted in accordance with Rule 38.

The following gentleman was balloted for as an ordinary member :—

Dr. Jatindra Nath Maitra, Physician and Surgeon, 68/A, Beadon Street, Calcutta, proposed by Babu Ramesh Chandra Majumdar, seconded by Dr. Satis Chandra Vidyabhusana.

The following papers were read :—

1. *A Note on the Vitality and Longevity of Silkworm Moths during the cold and rainy Seasons in Bengal.—By* MAUDE L. CLEGHORN.

2. *Dacca Diaries, I and II.—By* J. T. RANKIN.

These two papers will be published in the *Journal.*

3. *Zoological Results of a Tour in the Far East Echiuroids from brackish Water, with the Description of a new marine Species from the Andamans.—By* DR. B. PRASHAD.

This paper will be published in the *Memoirs.*

4. *The Spelling of Bābar's Name.—By* ABDUL WALI

This paper will be published in the *Journal.*

5. *Zoological Results of a Tour in the Far East. Les Orthoptères cavernicoles de Birmanie et la Peninsule Malaise, par* L. CHOPARD. *Communicated by* DR. N. ANNANDALE.

This paper will be published in the *Memoirs.*

6. *Note on the taxonomic Position of the Genus* Camptoceras, *Benson and* Lithotis Japonica, *Preston (Mollusca Pulmonata).—By* DR. N. ANNANDALE *and* DR. B. PRASHAD.

7. *A note on Buddhaghosa's Commentaries.—By* BIMALA CHARAN LAW.

These two papers will be published in the *Journal.*

The President announced that there would be no adjourned meeting of the Medical Section this month.

20. Notes on Important Arabic and Persian MSS. found in various Libraries in India.—II.

INTRODUCTION.

The second instalment of notices compiled by Mawlavi Hafiz Nazir Ahmad consists of descriptive notes of 4 Arabic and 315 Persian MSS., contained in 5 libraries. The description of the celebrated Rampore State Library is one of considerable interest. Accounts are given in footnotes of emperors, ministers, nobles, and learned men, their libraries, autographs and literary taste. He has also given details of distinguished scribes and their scripts.

Although the two instalments comprise notices of 478 Arabic and Persian MSS. and descriptive notes on 29 of the libraries of India, the amount of work still to be done is very considerable.

The following extract from the Introduction to the first instalment (published in the *J.A.S.B.* Vol. XIII, 1917) indicates the scope, arrangement etc. of the notes :—

" The notes are on unique, rare, and valuable MSS.; on old MSS. written in or before the 9th century of the Hijra, on autographs, copies of autographs, and such copies as bear sufficient testimony to their correctness, on MSS. written by eminent scholars or calligraphers, or bearing notes of Emperors, Kings or distinguished personages, on highly illuminated MSS., and works not noticed by Brocklemann in his *Geschichte der Arabischen Litteratur.* Each notice contains the title of the work, name of the author, date of his death, date of composition of the work, subject matter. the beginning and state of preservation of the MS., nature of hand-writing, date of transcription and the name of the scribe.

Remarks or criticisms on the notices themselves or of their arrangement are invited, and will be thankfully acknowledged, and suggestions for the improvement of the arrangement and classification will receive due attention."

The system of transliteration and abbreviations of the notes are as in the first instalment.

System of Transliteration.

ث = t̤
د = d̤
ذ
ژ =

ص = *ṣ*
ض = *ḍ*
ط = *ṭ*
ـَي = *ay*
ـَو = *aw*

List of Abbreviations.

A. = ʻAbd al-
A.S.B. = Asiatic Society of Bengal.
Ar. = Arabic.
Br. Mus. Suppl. = British Museum Supplement.
Brock = Brocklemann's Geschichte der Arabishen Litteratur.
Bodl. Lib. Cat. = Bodleian Library Catalogue.
B = Bin, Ibn (son of).
Berl. = Berlin Arabischen Handschriften, Ahlwardt
Cairo Lib. = Khedivial Library.
d. c. = Died circa.
Distr. Gaz. = District Gazetteer.
Fihrist = Kitāb al-Fihrist by Md. Isḥāq B. Abī Yaʻqūb al-Nadīm (d. A.H. 233 = A.D. 847).
Govt. Ind. Coll. = Government of India Collection.
H. K̲h̲. = Hajī K̲h̲alfa's Lexicon Bibliographicum et Encyclopædicum.
Ind. Off. Lib. Cat. = India Office Library Catalogue.
Imp. Lib. = Imperial Library (Buhar Collection), Calcutta
J.R.A S. = Journal of the Royal Asiatic Society.
K̲h̲izánah = K̲h̲izānah-i-ʻĀmirah of Azād Bilgrāmī.
Lith. = Lithographed.
Md. = Muhammad
M. = Mawlavī
Muʻjam = Muʻjam al-Buldān by Yāqūt.
O.B D. = Oriental Biographical Dictionary, Beale's.
O.P. Lib. = Oriental Public Library (Bankipore).
Pers. = Persian.
R.S. Lib. = Rampore State Library.
S̲h̲. ʻU. = S̲h̲ams al-ʻUlamā'.

I am grateful to Messrs. S. W. Kemp and G. H. Tipper for the encouragement and valuable help given by them to the Mawlavi in the preparation of the notices.

A. AL-MA'MŪN SUHRAWARDY,
Officer-in-charge of the Search for
Arabic and Persian MSS.

A.

DESCRIPTIVE NOTES ON LIBRARIES.

MURSHIDABAD.

(26) *Sayyid Abu'l Ḥasan Library, Murshidābād.*

This library was founded by Nawwāb Sayyid Zayn al-'Ābidīn (*d.* A.H. 1320 = A.D. 1902), father of the present owner. The founder was very fond of collecting Arabic, Persian and Urdū MSS and printed works. The works which the library contains have either been purchased or transcribed from originals. The founder had a special predilection for astronomy, as is evident from the instruments of observation still preserved by his son in the library. The collection of MSS. is smaller than that of printed works The number of MSS. is about two hundred, mostly on medical science but these and the printed works have no catalogue. The MSS. are not properly kept and are in a neglected condition owing to lax supervision on the part of the present owner, who is inclined to dispose of them, together with the instruments.

(27) *M. Sayyid Asad-Allāh Jalāl al-Dīn Library, Murshidābād.*

This library was founded by the owner's father, who had the title of '*Malik al-'Ulamā*'." and was a Shī'ah Mujtahid. The condition of the library is very bad. The MSS. are in a disorderly state and are much spoilt owing to the dilapidated state of the building in which the library is located There were formerly 3,000 Arabic and Persian MSS. besides printed works. The owner is willing to dispose of whatever now remains of the collection. It is a pity that a library, at one time evidently of great value, should have fallen into ruin owing to lack of proper care, consequent on the poverty of the owner. No MS. worth noticing could be found in the library, which does not possess a catalogue or any means of obtaining information of its contents.

(28) *Khān Bahādur Dīwān Faḍl-i-Rabbī*[1] *Library, Murshidābād*

This library contains only fifty Persian MSS., most of which are well-known historical and biographical works. I found two historical MSS. worth noticing, one entitled *Dastūr*

---

[1] For his life see the *Masnad of Murshidabad* by P. C. Majumdar and *History of Murshidabad* by Col. J. H. Tull Walsh.

al-'Amal of an Ajmīr Qānūngū, and the other an unique historical work without title by Ghīyāth al-Dīn Md. Jāmī who flourished in the 10th century of the Hijrah. I have mentioned this work in detail in my notices. (No. 55). When I arrived at Murshidābād in 1917, the Dīwān was undergoing medical treatment in Calcutta and died there shortly afterwards There is a copy of the first work (*Dastūr al-'Amal*[1]) in the *A.S.B. Library*. The copy under notice bears the signature of Mr. Blochmann, dated A.D. 1870 = A.H. 1287. The library has no catalogue. After the death of the Dīwān, it was removed to Sālār, his home in the District of Murshidābād.

DACCA.

(29) *Nawwāb of Dacca Library.*

This library was founded by Sir Khwājah Nawwāb 'Abdal-Ghanī. It contains 257 printed and MS. volumes of Arabic, Persian and Urdu works. The number of poetical works in manuscript is greater than of other works. There are 64 Persian poetical works in manuscript among which the Dīwān of 'Ubayd Zākānī[2] (*d.* A.H. 772 = A.D. 1370) is specially worth noticing. Unfortunately the MS. is defective at the beginning and the end; it is written in good Nasta'liq.

It appears that no improvement in the library was effected by the successors of the founder, Sir Nawwāb Aḥsan-Allāh and Sir Nawwāb Salīm-Allāh.

Great credit is due to Col. J. Hodding, C.I.E., Chief Manager, Nawwāb's Estate, for preparing a list of the works in the library. The A.S.B. is obliged to him for kindly sending the list together with certain MSS. on loan.

RAMPORE.

(30) *Rāmpore State Library.* (R S. Lib.)

Fayḍ-Allāh Khān.

This library was founded by Nawwāb Fayḍ-Allāh Khān (A.H 1187–1208 = A.D. 1775–1793). Nawwāb Fayḍ-Allāh Khān, son of Nawwāb 'Ali Muhammad Khān Bahādur (A.H. 1132-1163 = A.D. 1719–1748), was the first Nawwāb of the Rampore State. Nawwāb Fayḍ-Allāh was a great patron of learning. There were many 'Ulamā' in his Court, *e.g.* Mawlavi 'Abd al-'Alī, *Baḥr al-'Ulūm*,[3] Lucknow (*d.* A.H. 1225 = A.D. 1810)· Qudrat-Allāh Ṣādiqī, an inhabitant of Mavī near the town of Kāhar in Rohilkhand, author of *Jām-i-Jahān Numā*,[1] composed in A.H. 1193 = A.D. 1779, a general history, and *Takmilat al-Shu'arā*,[2] biography of the poets; Ḥakīm Bābar, author of *Fuṣūl-i-Fayḍ-Allāh Khānī*, a medical work. By order of the Nawwāb, a digest of Muhammadan Law, namely "*Fatāwā-ī-Fayḍ-Allāh Khānī*," was compiled in 3 vols. by the learned men of his Court on the model of the *Fatāwā-ī-'Ālamgīrī*. A copy of this *Fatāwā* is in the library. The Nawwāb was very fond of collecting Arabic, Persian and Urdū MSS., but there is nothing to show how many volumes the Nawwāb purchased, neither is there any catalogue of them.

---

[1] See for *Dastūr al-'Amal*, A.S.B. Cat., p. 30, No. D 163.

[2] See for 'Ubayd Zākānī and his works, *Br. Mus. Pers. Cat.*, p. 809b *Taqī Kāshī*, Oudh Cat., p. 18. *Sprenger Cat.*, p. 527, *Bodl. Cat.*, p. 350, and *Dawlat Shāh*, p. 288.

[3] See for 'Abd al-'Alī, *Baḥr al-'Ulūm*, *Tazkirah-ī-'Ulamā'i Hind*, p 123, *Hadā'iq al-Ḥanafīyah*, p. 467. *Aḥwāl 'Ulamā-ī-Firangi Maḥall*, p. 64, J.A.S.B. my *Ar. Notes*, Vol. XIII, 1917, p. lxxxvii, *Abjad al-'Ulūm*,

Nawwab Sayyid Md. 'Alī Khān.

The successor of Nawwāb Fayḍ-Allāh Khān Bahādur was Nawwāb Sayyid Muhammad 'Alī Khān Bahādur (A.H. 1208–1209 = A.D. 1793–1794). There is no record as to how far he contributed to the library.

Nawwāb Haji Ghulām Muhammad Khān.

Nawwāb Hājī Ghulām Muhammad Khān Bahādur succeeded Nawwāb Sayyid Muhammad 'Alī Khān Bahādur in A.H. 1209 = A.D. 1794, and was on the Gaddī about four months. Two historical works, one in Persian by Rif'at and another in Urdū by Mu'aẓẓam 'Abbāsī were dedicated to him. He is said to have collected many rare and unique works during his journey to Kābul and Hijāz, but there is no trace of them in the library at the present day.

Nawwāb Ahmad Alī Khān Bahādur.

Nawwāb Ghulām Muhammad was succeeded by Nawwāb Aḥmad 'Alī Khān Bahādur (A.H. 1209–1256 = A.D. 1794–1840). There is no trace of any catalogue prepared in his time. He was a great friend of learning, and there were many learned men, poets and physicians at his Court, *e.g.* Shāh Ra'ūf[3] Aḥmad, poetically called "Rāfat" (*d.* A.H. 1253 = A.D. 1837), author of *Tafsīr Ra'ūfī*, 'Anbar' Shāh Khān[4], a distinguished Persian poet who died after the year (A.H. 1237 = A.D. 1821), and Ḥakīm 'Aṭā-Allāh Khān, author of *Taẕkirah-ī-Khuld Bimethāl*.

Nawwāb Muhammad Sa'īd Khān Bahādur.

Nawwāb Aḥmad Alī Khān was succeeded by Nawwāb Muhammad Sa'īd Khān (A.H. 1256-1271 = A.D. 1840-1854). It appears that this Nawwāb purchased many books and MSS. for the library and prepared a cata-

---

p. 927, *Encyclopædia of Islām*, p. 584. *Baḥr al-'Ulūm* had a very nice library containing many rare works (see *Risālah-i-Quṭbīyah*, by his son 'Abd al-A'lā and *al-Nadwah*, 1910, No 12, p. 7.

[1] See Elliot, *History of India*, for details, Vol. VIII, p. 184.

[2] See No. 83.

[3] For Shāh Ra'ūf see *Taẕkirah-ī-'Ulamā'-ī-Hind*, p. 66, and *Khazīnat al-Aṣfiyā*, Vol. II, p 703.

[4] For 'Anbar Shāh's life and work see my *Pers. Notes* Nos. 301, 307 and 308, and *Inti-khāb Yādgār* of Amīr *Mīnā'ī*, p. 4.

logue which, however, is not now obtainable. He engaged many well-known scribes, decorators of Kashmīr and Lucknow on suitable stipends for copying and embellishing MSS. belonging to his library, and many book-racks and shelves were constructed in his time. He removed the library to the Toshah-Khānah (توشه خانه).

From the library accounts it appears that the sum of about Rs. 6,119 was debited to the purchase of books and MSS. Many authors, *e.g.* Mawlavī Fadl-i-Haqq Khayrābādī[1] (*d.* A.H 1278 = A.D. 1861), author of *Hadyah-i-Sa'īdīyah*, a famous philosophical work, and Sayyid Kifāyat 'Alī " Kāfī ", author of *Abwāb al-Tawārīkh*, were at his Court. The library became known to the public in the time of this Nawwāb.

Nawwāb Sayyid Yūsuf 'Alī Khān.

Nawwāb Yūsuf 'Alī Khān (A H. 1271-1281 = A.D. 1854-1864), successor of Nawwāb Ahmad 'Ali Khān, improved the condition of the library and appointed scribes to copy unique and rare MSS. In his time, books and MSS. to the value of Rs. 12,258 were purchased. Muftī Md. Sa'd-Allāh[2] (*d.* A.H. 1294 = A.D. 1876) and other learned men dedicated their works to this Nawwāb.

Nawwāb Kalb Alī Khān Bahādur.

Nawwāb Kalb 'Alī Khān (A.H. 1281--1304 = A.D. 1864-1886) succeeded Nawwāb Muhammad Sa'īd Khan. This Nawwāb, who was a great patron of learning, materially improved the state of the library. From his youth he was fond of studying and collecting MSS., and this fact is borne out by his autographs and signatures in the MSS. The Nawwāb removed the library from the Toshah-Khānah to a palace near the Machlī-Bhawan (مچهلی بهون) and appointed Rahīm Shāh, the Dārughah of the Jewel House, as librarian. The Nawwāb in his last days constructed a two-storied building for the library near the old Lāl-Pardah. (قدیم لال پرده)

This library was named " *Kutub-Khānah-i-'Ulūm Dīnīyah* " (کتب خانهٔ علوم دینیه), which is a chronogram. The year A.H.1203 = A.D. 1886 is deduced from it (the year of construction of the library building). This building still stands and has the above name inscribed on it The library was about to be removed to the new building when Nawwāb Kalb 'Alī Khān died. The Nawwāb was very fond of Persian *belles-letttres*, as his compositions show. Unfortunately his life was cut short, when he was engaged in writing in Persian the history of Cathay and China. This incomplete work may be seen in his library in manuscript.

---

[1] For his life and works see *Tazkirah-i-'Ulamā'i Hind*, p. 164, and *Hadā'iq al Hanafīyah*, p. 480, and my *Notes*, *J.A.S.B.* 1917, No. 2, Vol. XIII, No. 151.

[2] For Sa'd-Allāh *Muftī*. See *Hadā'iq al-Hanafīyah*, p. 488, and *Tazkirah-i-'Ulamā'-i-Hind*, p 74.

No less than 93 works were dedicated to this Nawwāb by distinguished writers. Among many others the following learned men and poets were attached to his Court :—

Sa'd-Allāh Muftī, 'Abd al-Ḥaqq Khayrābādī[1] (son of Mawlānā Faḍl-i-Ḥaqq) and *Dāgh*, the well-known Urdū poet of India, etc. The Nawwāb appointed Munshī Amīr Aḥmad,[2] poetically called *Mīnā'ī*, to prepare an alphabetical catalogue of the library; but unfortunately *Mīnā'ī* left Rāmpore for Lucknow. before the work was done.

The Nawwāb purchased many valuable, interesting, rare and unique MSS in his time. and many dealers in MSS. from distant countries used to come to him. He purchased the *Ṣad Pand Luqmān* (صد پند لقمان) for Rs. 1,000. Books and MSS. in his time were purchased at an outlay of Rs 43,608.

Nawwāb Mushtāq 'Alī Khān.

After Nawwāb Kalb 'Alī Khān, Nawwāb Mushtāq Alī Khān (A.H 1304-1306 = A D. 1887-1889) sat on the Gaddī. During his tenure of power. which was only two years, he did much to improve the status of the library. He added to the collection 323 volumes, purchased when he was the heir-apparent, and appointed Bakhshī 'Abd al-Raḥīm as the librarian, and many scribes, calligraphers, gilders. binders. folio-turners, two registrars, etc.

A book register was prepared for the library in his time, and six learned men were appointed to enter the books and MSS. in it with their full details. Among these was Mawlavī Md. Ṭayyib, an Arab who died in A.H. 1335 = A.D. 1916. The Nawwāb appointed General Muhammad A'ẓam al-Dīn Khān as the chief officer of the library. The General was a great patron of learning and was very fond of collecting books and MSS. The Nawwāb laid the foundation of a new library building, but he died before it was finished. Books and MSS. to the value of Rs. 7,885 were purchased in his time.

Nawwāb Md. Ḥāmid 'Alī Khān.

Nawwāb Mushtāq Alī Khān was succeeded by Nawwāb Md. Ḥāmid 'Alī Khān in A.H. 1306 = A.D. 1888 (the present Nawwāb of Rampore). The construction of the library building was completed in his time in A H. 1309 = A.D. 1891 at an outlay of Rs. 40,000. It consists of three rooms, one in the middle, and one on each wing with a gallery running round the central room. The library rooms are paved with stone mosaic. In each of the three rooms there are 34 glass book-cases. The book-cases in the middle room contain English and Urdū books and works written in fine handwriting. In the right-hand room there are books and MSS. in the Pus͟hto, Turkis͟h and Persian languages, and in the left-hand room are only Arabic books and MSS.

---

[1] 'Abd al-Ḥaqq was for some time Head Mawlavi of the Calcutta Madrasah. For the history of the Calcutta Madrasah see *Bengal Past and Present*, Vol. VIII, Nos. 15 and 16.

[2] Author of *Intikhāb Yādgār*, etc., etc.

In the meantime General Muhammad A'ẓam al-Dīn K͟hān who was in charge of the library was assassinated. From the 14th of April, A.H. 1309 = A.D. 1891, the charge of the library was given to Nawwāb Yārjang. On the 29th June, A.H. 1308 = A.D. 1891, Major Vincent came to Rampore as the President of the Council, and appointed Ḥamīd al-Ẓafar K͟hān as the Secretary of the Council, and entrusted him with the charge of the library. At the suggestion of Major Vincent, Ḥamīd al-Ẓafar K͟hān separated and arranged the books and MSS. according to their languages. On the 31st March, A.H. 1309 = A.D. 1892, Major Vincent opened the library formally. When the library was under the management of the Council, MSS. continued to be added to the number already in stock.

In A.H. 1314 = A.D. 1896, when the Nawwāb was invested with full powers, he appointed Muhammad Ajmal K͟hān, a famous physician of Delhī, as Superintendent of the library in addition to his hospital duties. The present Superintendent in his time prepared a subject-catalogue of the Arabic books and MSS. with the assistance of Mahdī 'Alī K͟hān, poetically called "*Mumtāz*," who had been appointed custodian of the library in A.H. 1281 = A.D. 1864. This Catalogue, which abounds in errors, does not contain full information regarding the works and their authors, but is to some extent helpful.

In A.H. 1315 = A.D. 1897 Ḥāfiẓ Aḥmad 'Alī[1] K͟hān, poetically called "*S͟hawq*", was appointed Superintendent of the library, in addition to his duties as Comptroller of the Nawwab's household, in the place of Ḥakīm Muhammad Ajmal K͟hān. Ḥāfiẓ Aḥmad 'Alī K͟hān is very intelligent and painstaking. Mr. Beveridge has commended him in his article in the *J.R.A.S.*, 1901, p. 75. He rendered me valuable assistance in my work when I was at Rampore. A catalogue of Persian works[2] is being prepared under his supervision.

I trust that the Persian catalogue will be of great help to Orientalists and scholars in making researches. I am informed by the present Superintendent that the number of Arabic and Persian MSS. was 8,587 up to September 1915, and of printed books 13,503, but Mr. Beveridge[3] has noted the number of MSS. as 8.720 in the *J.R.A.S.*, 1901, p 74.

---

[1] See my *Notes*, *J.A.S.B.*, Vol. XIII, 1917, No. 2, p. lxxiv.

[2] For Persian Catalogue of Rampore see my Urdu article, published in the *Aligarh Institute Gazette*, 13th March 1918, p. 6b, line 27.

[3] Mr. Beveridge has noted only the following 7 Arabic, Persian and Turkis͟h MSS :—

It appears from the statement[1] of Hakīm Muhammad Ajmal K̲h̲ān, Superintendent of the library, that in A H 1315 = A.D. 1891, the number of the entire collection, printed works and MSS. was 11,000, as follows :—

Arabic	5,194
Persian	3,304
Urdū	2,392
Turkī	46
Pushto	37
Bhāshā	16
Sanskirit	3
Nāgrī	7
Panjābi	1
	11,000

I am informed there are 3,392 Persian MSS. on the subjects detailed below :—

1. Astrology (نجوم)	52
2. Astronomy (هيئت)	58
3. Biographies of Traditionists (اسماء رجال)	594
,, ,, Poets تذكرة الشعراء)	
,, ,, Sufis and (طبقات الصوفيه	
Works on Sufism (و تصوف)	

Arabic MSS.

(1)

Qānūn Mas'ūdī, by Abū Rayhān Md. B. Ahmad al-Bīrūnī (*d.* A.H 440 = A.D. 1048), dated A.H. 1035 = A.D. 1625.

(For Bīrūnī see *Tārīk̲h̲ al-Hukamā'* of Qifṭī, p. 97, and '*Uyūn al-Anbā'*, Vol. II, p. 20)

Turkī MSS.

(2)

A *Turkī Poem* written by the Emperor Bābar (A H. 899—937 = A.D. 1493-1530).

Persian MSS.

(3)

Tārīk̲h̲-i-Bābarī of S̲h̲ayk̲h̲ Zayn K̲h̲wāfī.

(4)

History of Akbar of Ḥājī Md. 'Ārif Qandhārī.

(5)

Tafhīm al Tanjīm, by al-Bīrūnī (see *Br. Mus. Pers. Cat* , p. 451).

(6)

Tārīk̲h̲-i-Guzīdah, by Ḥamd-Allāh Mustawfī, composed A.H. 730 = A.D. 1329, dated A.H 843 = A.D. 439.

(7)

Tārīk̲h̲-i-Akbarī, dated A.H. 1041 = A.D. 1631. For fuller details see *J.R.A.S.*, 1901, pp. 75-77.

---

[1] See for details preface of the *Arabic Cat.*, *Rampore Library*, prepared by Ḥakim Md. Ajmal Khān, p. 3.

4.	Calligraphical Specimens (جرايد و وصليان)	28
5.	Commentaries on the Qur'ān (تفسير)	25
6.	Chemistry (كيميا)	19
7.	Chirography (املا)	5
8.	Chess and Card (شطرنج و گنجفه)	4
9.	Cookery (طباخي)	8
10.	Dictionary of the Qur'ān (لغات القرآن)	4
11.	Ethics (اخلاق)	148
12.	Etymology (صرف)	37
13.	Fortune-telling (جفر)	20
14.	Fables, Tales and Poetry (قصص - داستان و دواوين)	955
15.	Geography (جغرافيه)	10
16.	Geomancy (رمل)	25
17.	History (تاريخ)	271
18.	Index of the Qur'ān (استخراج آيات قرآن)	23
19.	Interpretation of Dreams (تعبير)	4
20.	Jurisprudence (فقه)	27
21.	Law of Inheritance (فرايض)	6
		2,323
22.	Lexicography (لغات)	118
23.	Literature (ادب)	167
24.	Logic (منطق)	6
25.	Mathematics (حساب)	22
26.	Medicine (طب)	245
27.	Military Arts (حرب)	6
28.	Miscellaneous (متفرقات)	70
29.	Music (موسيقي)	13
30.	Philosophy (فلسفه)	22
31.	Physiognomy (قيافه)	1
32.	Prayer (ادعيه)	47
33.	Prosody (عروض)	29
34.	Rhetoric (بلاغت)	44
35.	Surgery (تشريح)	3
36.	Syntax (نحو)	18
37.	Talisman and Magic (طلسمات و عمليات)	19

38.	Theology (عقائد و کلام)	83
39.	Theory of Jurisprudence (اصول فقه) ..	8
40.	Tradition (حديث)	104
41.	Various Readings of the Qur'ān (تجويد) ..	22
42.	Veterinary Arts (بيطرة)	20
		1,069
		2,323
		3,392

The number of medical works is larger than the rest; the reason for this appears to be the predilection which the Superintendent of the library, Ḥakim Md. Ajmal K͟hān, had for medicine.

When I visited the library I found the library staff consisted of 38 persons whose monthly salaries totalled Rs. 567. Among them were ten calligraphers engaged in copying old rare MSS. and six folio-turners in dusting and clearing. The total expenses of the library from 1307 A.H. = 1889 A.D. to 1322 A.H. = 1904 A.D., were Rs. 92,446. Of the many libraries[1] I have inspected I found this the best of all. Probably there is none in India equal to it. It has been visited by every Viceroy. There is in it a splendid collection of Arabic and Persian MSS. well kept and cared for. It was quite a pleasure to see books so well-housed as they are here. Probably there is hardly a library in the Islamic world from which a MS. has not found its way to this library. There are many holographs and old copies, and also many copies which were written in the lifetime of their authors and many MSS. which were collated and corrected by famous and eminent scholars.

I was engaged for about five months in inspecting the library, during which time I was able to examine thoroughly a considerable number of Persian MSS. I imagine the whole contents of the library cannot be inspected fully in less than three years. Owing to an outbreak of plague, I was compelled to leave Rampore before I had finished my work. I suggest, with due respect to the authorities, that the preparation of a catalogue on the lines of those published by the British Museum is urgently necessary and should be undertaken as soon as possible.

There are more than 347 Arabic and 523 Persian MSS. written in exquisite hand by the authors themselves and by eminent calligraphers. Portraits of well-known artists are in abundance in the library. Among the many remarkable, old and interesting works the following Arabic and Persian MSS. are specially worthy of attention :—

---

[1] 24 libraries visited by me. See for full details *J.A.S.B.*, Vol. XIII, No. 2, June 1917, and my *Arabic Notes*, p. lxxx.

ARABIC MSS.

(1) An unique and old commentary upon the *Qur'ān*, entitled *al-Nukat*[1] *wa'l 'Uyūn* (النكت و العيون), by 'Alī B. Md. B. Ḥabīb al-Māwardī,[2] a most distinguished jurisconsult of the Shafite sect (*d.* A.H. 450 = A.D. 1058). Dated A.H. 577 = A.D. 1183.

(2) Another unique and old commentary upon the *Qur'ān* from سورة الاحزاب Chapter 33 to the end, entitled *al-Taysīr fi'l Tafsīr*[3] (التيسير فى التفسير), by Abu'l Qāsim 'Abd al-Karīm B. Hawāzin al-Qushayrī,[4] an eminent jurisconsult He also possessed great skill in penmanship and a profound knowledge of Sufism (*d.* A H. 465 = A.D. 1074) Transcribed by Ja'far B 'Umar al-Ṣayrafī al-Ḥaddādī, dated A.H. 679 = A.D. 1273

(3) An autograph copy of an unique work containing the biographies of the traditionists entitled *Nihāyat*[5] *al-Su'ūl fī Riwāyat al-Sittat al-Uṣūl* نهاية السئول في رواية الستة الاصول by Ibrāhīm[6] B. Md. B. Khalīl Burhān al-Dīn al-Ḥalabī, called Sibṭ B. al-'Ajamī (*d.* A.H. 841 = A.D. 1438). He began to compose[7] the work in A.H. 839 = A.D 1436 and finished it in the course

---

[1] For reference see *H. Kh* , Vol. VI, p. 384.

[2] For Māwardī's life and other works, see *Brock* , Vol. I, p. 386, and *Ibn Khallikān*, p 401.

[3] For reference see *H. Kh.*, Vol. II, p. 487, who holds a very high opinion of the commentary as appears from the following remark :— و هو من اجود التفاسير -

[4] For Qushayrī and his other works, see *Brock.*, Vol. I, p 432, *J.A.S.B.* (New series), Vol. XIII, 1917, my *Arabic Note* No. 16, *Ibn Khallikān* and *Nafahāt* (Calcutta 1859), p. 351.

[5] For reference see *H. Kh.*, Vol. VI, p. 401

[6] For author's life and his other works, see *Berl. Library Catalogue*. Nos. 1479 and 3350, and *Brock* , Vol II, p. 67.

[7] At the beginning of the fly-leaf the following note appears by the author:— فرغ من تعليقه مولفه ابراهيم بن محمد بن خليل سبط ابن العجمي في سادس عشرة (عشر) من ربيع الاول من سنة تسع و عشرين و ثمانمائة بالمدرسة الالفية بحلب - الحمد لله وحده (و) صلى الله عليه على سيدنا محمد و آله و اصحابه و سلم - و ابتدات في عمله من ابتداء ربيع الاول او في ربيع الآخر من سنة ثمان و عشرين و ثمانمائة -

On the last fol. another note on the merits of the work is written by a critic:— هذا الكتاب فيه اكثر من ثمانين الف راويا لحديث رسول الله صلى الله عليه و سلم و هو كتاب لم يولف قبله ولا بعده في ضبط رواة الحديث و الكلام

of a year. Dated the Madrasah Alfīyah at Aleppo (حلب) A.H. 829 = A.D. 1436.

(4) A complete Arabic *Dīwān* entitled *al-Ḥādirah* (الحادرة), written by Yāqūt [1]-Musta‘simī, the celebrated calligrapher (*d.* A.H. 698 = A.D. 1298). Dated [2] A.H. 629 = A.D. 1229. It bears the seal of Ibrāhīm ‘Ādil Shāh [3] (ابراهيم عادل شاه دكهني) to whose library the MS. formerly belonged.

(5) A famous autograph copy on the Ḥanafī school of law entitled *al-Ashbāh* [4] *wa'l Naẓā'ir* (الاشباه و النظائر) by Zayn al-‘Ābidīn B. Ibrāhīm, called Ibn Najīm (*d.* A.H. 970 = A.D. 1563). Dated A.H. 969 = A.D. 1562.

(6) *Maqāmāt Ḥarīrī* (مقامات حريري), a well-known work on Arabic literature, by Md. al-Qāsim B. ‘Alī-B. Md. al-Ḥarīrī. Written by the famous rhetorican Sa‘d al-Dīn Mas‘ūd B. ‘Umar al-Taftāzanī [5] (*d.* A.H. 791 = A.D. 1389), with marginal notes, dated the Madrasah ‘Imādīyah A H. 740 = A.D. 1338 as he says at the end of the MS. :—العبد الداعي مسعود بن عمر بن محمد القاضي التفتازاني في اواخر شوال يوم السبت سنة اربعين و سبعمائة بالمدرسة العمادية الخ ۔

(7) A very valuable and well-known commentary upon the *Kāfīyah* entitled *Raḍī* [6] (رضي), by Raḍī al-Dīn Md. (*d.* A.H. 687 = A.D. 1287). Transcribed by Sa'd-Allāh Khan (*d.* A.H. 1066

عليهم جرحا و تعديلا و بيان حيثياتهم و وفياتهم بخط مؤلفه سبط ابن العجمي
المتوفى سنة ٨٤١ هجري [١٤٣٧ ع] اسكنه فسيح جنانه ۔

---

[1] For Yāqūt-Musta‘ṣimī, see J.A.S.B., 1917 (New series), Vol XIII, No. 2, my *Notes* No. 1. For *Dīwān al-Ḥādirah*, by Quṭbah B. Aws, see *Brock.*, Vol. I, p. 26

[2] In the last fol of the *Dīwān* the following lines are written :—

تم شعر الحادرة بحمد الله تعالى و حسن توفيقه ۔ مشقه ياقوت
٦٢٩
المستعصمي في شوال تسع و عشرين و ستمائة [١٢٣١ ع] حامدا الله تعالى
على نعمه و مصليا على نبيه محمد و آله و سلم ۔

[3] Ibrāhīm ‘Ādil Shāh (A.H. 941-963 = A.D. 1534-1555). See *O.B.D.*, p. 171, and *Br. Mus. Pers. Cat.*, p. 464b Ādil Shāh was very fond of collecting interesting MSS for his library, as would appear from my *Notes* (No. 270) (see *Fergusson's Architecture at Bijapore*, p 75) and preface of the Loth Catalogue.

For other copies by the same scribe (Yāqūt) see J.R.A.S., 1901, p. 334, No. 5961. Selections from the *Dīwān-i-‘Alī* written by the same scribe are preserved in Munshī ‘Alī Ḥusayn Lib. at Hyderabad, Deccan.

[4] For *Ashbāh wa'l Naẓā'ir* and its author consult *Brock.*, Vol. II, p. 310, and *H. Kh.*, Vol. I, p. 309.

[5] For Taftāzānī, see *Brock.*, Vol. II, p. 215.

[6] For fuller details, see *J.A.S.B.*, 1917, No. 2, Vol. XIII (New series), my *Arabic Notes* (No. 150).

= A.D. 1655) who was the celebrated minister of the Emperor Shāh Jahān. See for this work my Note No. 150 in the J.A.S.B. XIII, 1917, No. 2, *Ma'āthir al-Umarā'*, Vol. I, pp. 441-449 and *Ḥayāt-i-Ṣāliḥ* of Md. Sa'īd Aḥmad (Urdū).

TURKISH MS.

(8) A complete work in Turkish written by the Emperor Bābar[1] (A.H. 899–937 = A.D. 1493–1530). This fact is attested by a note in the handwriting of the Emperor Shāhjahān (A.H. 1037-1069 = A.D. 1628-1659). For fuller details see J.A.S.B. 1910, Vol. VI, Extra No.

PERSIAN MSS.

(9) A very valuable and old copy of the Persian translation of *Tafsīr Ṭabarī* (ترجمهٔ تفسیر طبری) dated c. A.H. 600 = A.D. 1203. See for details (No. 11).

(10) A very valuable copy of the well-known religious tract of Khwājah 'Abd-Allāh al-Anṣārī, transcribed by Sulṭān 'Alī al-Mashhadī the celebrated calligrapher. The copy has notes written by the Mughal Emperors. For fuller details see (No. 36).

(11) A rare and autograph copy of Muhammadan Law entitled *Fatāwā-i-Amīnīyah* (فتاوی امینیه) by Md. Amīn B. 'Abd-Allāh. Dated A.H. 978 = A.D. 1570. For fuller details see (No. 51).

(12) An account of a journey of the Emperor Muhammad Shāh[2] A.H. 1131-1161 = A.D. 1718-1747. For details see (No. 61).

(13) Two valuable copies of the *Dīwān-ī-Hafiz*. (See Nos. 124 and 125.)

(14) A very valuable and interesting copy of the *Kullīyāt-i-Sa'dī*. (See No. 182.)

(15) A very valuable copy of the *Kullīyāt-i-Faqīh 'Imād*. (See No. 185.)

(16) An autograph and valuable copy of the *Dīwān-i-Anand Rām* poetically called "*Mukhliṣ*"[3] (*d.* A.H. 1164 = A.D. 1750). (See No. 194.)

(17) A very rare *Mathnavī* entitled *Jāmi'al-Asrār* Dated A.H 1064 A.D. 1653. (See No. 198.)

(18) An unique copy entitled *Mathnavī Ẓikr al-'Aysh*, by Āsī (?). (See No. 202.)

---

[1] The Emperor Bābar was very fond of collecting Arabic, Persian and Turkish works. He appropriated the library of Ghāzīkhān, an Afghān noble of the Panjāb, whom he imprisoned: see Talbot's *Memoirs of Bābar*, p. 176, *Tazkirat al-Salāṭīn* (MS. copy in the Bohār collection fol. 104).

[2] The Emperor Muhammad Shāh had a library containing many interesting MSS. (see *Bod. Lib. Cat.* Nos. 128 and 244).

[3] For Anand Ram's life and his other works see Elliott, Vol. VIII, p. 76, *Natā'ij al-Afkār* and *Khizānah*.

(19) A rare copy of seven *Mathnavies*, entitled *Sab 'al-Ma'ānī*, by Yūsuf 'Alī B. Md. al-Ḥusaynī al-Jurjānī. (See No 204.)

(20) A very rare and valuable copy of a romantic poem, entitled *Manṭiq al-Rayāḥīn* by Āsī, composed in A.H. 830 = A.D. 1426. (See No. 211.)

(21) An unique *Mathnavī* entitled *Nāẓir wa Manẓūr*, by Āsī. (See No. 215.)

(22) A very famous religious tract entitled *Sad Pand Luqmān*, by Khwājah 'Abd-Allāh Anṣāri, transcribed by the celebrated calligrapher Mullā Mīr' Alī ; it bears the autographs of the Mughal Emperors and of Jahan Ārā Begam. (See No. 239.)

(23) A very valuable and old copy of *Ẓakhīrah-ī-Khwārizm Shāhī* (ذخيرۀ خوارزم شاهي). Dated A.H. 560 = A.D. 1164. (See No. 247.)

(24) A very interesting work on interpretation of dreams. Presented by the Emperor Akbar to Bayram Khān, with an autograph note by 'Abd al-Raḥīm Khānkhanān (*d.* A.H. 1030 = A.D. 1626). (See No. 283.)

(25) A very valuable copy of the *Gulistān*, transcribed by the celebrated calligrapher 'Abd al-Rashīd Daylamī (*d.* A.H 1085 = A.D. 1674). (See No. 313.)

(26) A very valuable and excellent copy of *Rāwḍat al-Anwār* of Khwājū Kirmānī (*d.* A.H. 742 = A.D. 1341). Transcribed by the famous calligrapher Mīr 'Alī. Dated A.H. 975 = A.D. 1567. (See No. 201.)

(27) A very valuable copy of *Haft-Awrang* of '*Jāmī*' (*d* A.H. 898 = A.D. 1492) ; it contains 19 excellent miniatures. (See No. 220.)

(28) A very valuable autograph commentary upon the famous astronomical work entitled *Kashf al-Ḥaqā'iq*. Dated A.H. 709 = A.D. 1309. (See No. 252.)

The library contains many works of authors of world-wide fame. The following are the names of some such authors, and the figures against their names denote the number of their works that are in the library :—

	Number of works.
(1) Abū 'Alī al-Ḥusayn B. 'Abd-Allāh B. Sīna[1] (Avicenna) (*d.* A.H. 428 = A.D. 1037) . ..	46
(2) Abū Ḥāmid Md. B. Md. al-Ghazzālī[2] (*d.* A.H 505 = A.D. 1111)	23

---

[1] See for Sīnā's life and his works, *Brock.*, Vol. I, pp. 452-458, '*Uyūn al-Anbā*, Vol. II, pp. 2-20, *Tārīkh āl-Hukamā'* of Qifṭī (Leipzig), pp. 413-426 and p. 190.

[2] See for Ghazzālī's life and his works, *Brock.*, Vol. I, pp. 419-422, *al-Ghazzālī* of Shiblī Nu'mānī (in Urdū), *Literary History of Persia*, by Mr. Browne, p. 293, and *Ibn Khallikān*, p. 536.

	Number of Works.
(3) Md. B. Md. B. Ṭarkhān Abū Naṣr al-Fārābī[1] (*d.* A.H. 339 = A.D. 950)	28
(4) Abū Ja'far Naṣīr al-Dīn Md. B. Md. al-Ḥasan al-Tūsī[2] al-Shī'ī (*d.* A.H. 672 = A.D. 1273)..	32
(5) Aḥmad B. 'Alī B. Md. B. Hajar[3] Shihāb al-Dīn al-'Asqalānī al-Shāfi'ī (*d.* A.H. 852 = A.D. 1449)	17
(6) 'Abd al-Salām B. 'Abd-Allāh B. Taymīyah[4] al-Ḥarrānī (*d.* A.H. 652 = A.D. 1254) ..	9
(7) Fakhr[5] al-Dīn Md. B. 'Umar B. al- Ḥusayn B. Khaṭīb al-Rāzī (*d.* A.H. 606 = A.D. 1209) ..	10
(8) Abū'l Rayḥān Md. B Aḥmad al-Bīrūnī[6] (*d.* A.H. 440 = A.D. 1048)	5
(9) 'Abd al-Raḥmān B. Abī Bakr Jalāl al-Din al-Suyūṭī[7] (*d.* A.H. 911 = A.D. 1505) ..	84
(10) Muḥyī[8] al-Dīn Md. B. 'Alī B. Md. B. al-'Arabī (*d.* A.H. 638 = A.D. 1240)	35
(11) 'Alī B. Aḥmad B. Ḥazm[9] al-'Andalūsī (*d.* A.H. 456 = A.D. 1064)	3

I cannot conclude these *Notes* without expressing my indebtedness to the Commissioner of Bareilly who procured the necessary permission from His Highness the Nawwāb of

---

[1] For Abū Naṣr Fārābī's life and his works, see *Brock*, Vol. I, p. 210, Uyūn al-Anbā', vol. II, pp. 134-140, and *Tārīkh al-Ḥukamā'* (Leipzig), pp. 277-280, *O.B.D.*, p. 128, and *Ibn Khallikān*, p. 677.

[2] For Ṭūsī's life and his works, see *Brock.*, Vol. I, p. 508, and *Rawḍāt al-Jannāt fī Aḥwāl 'Ulamā'al Sādāt* (Bombay).

[3] For Ibn Hajar 'Asqalānī's life and his works, see *Brock.*, Vol. II, pp. 67-70.

It may be interesting to Orientalists to know that there is an autograph copy of *Fath al-Bārī fī Sharh al-Bukhārī* (see *Brock.*, Vol. I, p. 159) by the same author (Ibn Hajar 'Asqalānī) in the library of the A.S.B., in the Government collection (see *Catalogue*, *part I*, p. 38, Nos. 695 and 696). I intend to give a list of the valuable and interesting MSS. in the library of the A.S.B., and in the Government collection with their full particulars in my next *Notes*.

[4] See for Ibn Taymīyah's life and his works *Brock.*, Vol. I, p. 399, *Fawāt*, Vol. I, p. 257 *Maqālāt-i-Shiblī* (in Urdū), pp. 217-234, *Tabaqāt al-Hanābilah* of Ibn Rajab (*d.* A.H. 795 = A.D. 1393), *Tabaqāt al-Huffāẓ* of Ẓahabī (*d.* A.H. 748 = A D. 1348), *Durar al-Kāminah* of Ibn Ḥajar al-'Asqalānī (*d.* A.H. 852 = A.D. 1449), and *Fawāt al-Wafayāt* of *Ibn Khallikān* (*d.* A.H. 681 = A.D. 1282). Ibn Taymīyāh's father had a good library which he conveyed to Dimashq when the Tātārs rose in rebellion in his country (Ḥarrān), (see *Ṭabaqāt al-Hanābilah of Ibn Rajab*).

[5] For Rāzī's life and his works consult *Brock.*, Vol. I, pp. 506-508, and *Uyūn al-Anbā'*, Vol. II, pp. 23-30.

[6] For Bīrūnī's life and his works see *Brock.*, Vol. I, pp 475-476, and *Uyūn al-Anbā*, Vol. II, p. 20.

[7] For Suyūṭī see *Brock.*, Vol. II, pp. 143-158.

[8] For Ibn 'Arabī's life and his works see *Brock.*, Vol. I, pp. 441-448, *Nafaḥāt al-'Uns*, pp. 428 and 633, and *O.B.D.*, p. 167.

[9] For Ibn Ḥazm's life and his works see *Brock.*, Vol. I, p. 400, *Berl.*

Rampore[1] for me to inspect and write notes on the MSS. of the library; I am also obliged to those gentlemen who rendered me assistance in writing this history of the library. But my warmest thanks are due to Mr. S. W. Kemp, Superintendent Indian Museum, for kindly revising the proof sheets of Section A, and to Mr. G. H. Tipper, Superintendent Geological Survey of India, for revising the foot-notes of the notices.

Lib. Cat., No. 9510, *Maqālāt-i-Shiblī* (in Urdū), pp. 68-76, and *Taẓkiraṭ al-Ḥuffāẓ* of Ẓahabī (*d.* A.H. 748 = A.D. 1348).

[1] For the history of the Rampore State see *Imp Gaz. of Ind.*, Vol. XXI, pp. 182-190.

B.

NOTES ON IMPORTANT ARABIC MSS.

I.

COMMENTARY ON THE QUR'ĀN.

153.

المعجز[1]

An unique commentary upon the difficult passages of the *Qur'ān* without author's name. Probably the author flourished not later than the 7th century of the Hijrah, as appears from his remarks on the writings of a contemporary author 'Abd al-Ḥaqq called Ibn 'Aṭīyah (*d.* A.H. 542 = A.D. 1147). It appears from the mode of style that the author was a highly accomplished writer.

The author in his commentary on the 1st chapter of the *Qur'ān* (سورة الفاتحة) has discussed briefly almost all the cognate subjects shortly, and in the rest of the commentary he has mentioned the grammatical construction (اعراب), vocabulary (لغت) and application (فوايد) of the verses of the *Qur'ān*.

Unfortunately two verses at the beginning of the 2nd chapter (سورة البقر) are missing. Some fols. are spoiled by moisture. Written in Naskh. Dated Jurjānīyah[2] in Khwārizm[3], A.H. 717 = A.D. 1317.

Beg :—الله احمد فهوالحقيق بالمحامد حمدا يفوق حمد كل حامد

End :— تم الكتاب و ربنا محمود و له المكارم و العلى والجود

(M. Md. Sūratī, Rajpotana, Tonk.)

II.

BIOGRAPHY.

154.

This work contains biographical accounts of learned men, judges, saints, traditionists, literateurs, poets, caliphs, kings, nobles and viziers of all places, who lived in the 8th century to 10th century of the Hijrah :—فهذا كتاب من اهم ما به بعتني جمعت فيه من علمه من اهل هذ القرن الذي اوله احدى و ثمانمائة ختم بالحسنى من ساير العلماء و القضاة و الصلحاء و الرواة و الادباء و الشعراء و الخلفاء و الملوك و الامراء و المباشرين و الوزراء مصريا كان او شاميا حجازيا او يمنيا روميا او هنديا مشرقيا او مغربيا ۔

---

[1] For fuller details of the work see my Urdū article, published in the *Aligarh Institute Gazette*, 23rd May 1917.

[2] For Jurjānīyah see *Mu'jam al-Buldān*, Vol. II, p. 54.

[3] For Khwārizm see *Mu'jam al-Buldān*, Vol. II, p. 480.

The name of the work *Ḍaw'al-Lāmi'* ضوء اللامع by Sakhāvī (d. A.H. 902 = A.D. 1497) appears in the title-page, but from the account given on the last fol., it appears that the work was not composed by Sakhāvī because he died in A.H. 902. It contains accounts of incidents which happened 28 years after his death. From the following account in fol. 252 it appears that the work was composed by one of his pupils as a supplement, (ذيل) when Sakhāvī was alive :—شيخنا واستاذنا حافظ الاسلام وحيد دهره الشيخ شمس الدين السخاوي ختم الله له بخير و فتح في اجله لنفع خدام السنة الشعرية الخ ۔

The above statement proves that the work cannot be *Ḍaw'al-Lāmi'*. ضوء اللامع. (For *Ḍaw' 'l-Lāmi'* see *Br. Mus. Pers. Cat.*, p 511*a*, and the Introduction of the *Hist. of the Caliphs* by Maj. Jarret, p. x.)

There are two commentaries (supplements ذيل), one entitled *Badr al-Ṭāli'* بدر الطالع by Shammā' (d. A.H 936 = A.D. 1529). A copy of *Badr al-Ṭāli'* is in the *O. P. Library* (*Bankipore*). The beginning of the work does not agree with the copy under notice. This work cannot also be *Badr al-Ṭāli'*.

The other entitled *al-Qabs al-Ḥāvī* by 'Abd al-Salām (d. A.H. 931 = A.D. 1525) may be *al-Qabsal-Ḥāvī*. *H. Kh.* has only noticed the above three works under *Ḍaw al-Lāmi'* but has not given their beginnings. See also *Brock.*, Vol. II, p. 34, for the above three works. However, the work under notice is rare, valuable and interesting and is arranged alphabetically according to the names of persons. It is a pity that the names are up to the letter 'Ayn (ع) 'Ubayd عبيد only.

The author gathered the materials from the following works as mentioned in the preface :—

تاريخ عيني ۔ مقريزي ۔ معجم ابن فهد ۔ تاريخ ذهبي ابن حجر ۔ ضوء اللامع وغيره ۔

The MS. contains many clerical mistakes. Written in minute and neat Naskh, probably in the author's time.

Beg :— الحمد لله جامع الشتات و رافع من شاء فی الحياة و بعد الممات الخ

(Khundkār Md. Ṣālih, Salār, Distr. Murshidabād.)

Bought for the Government collection in A.S.B. in 1918.

III.

MEDICINE.

155.

جواهر اللغت[1]

A treatise on medicine by Md. B. Yūsuf.[2] It is divided into three objects (مقاصد) :—

(1) Name of the limbs (في اسماء الاعضاء).

(2) Name of the simple and compound medicaments (في الادوية المفردة و المركبة).

(3) Definition of diseases (في تعريفات الامراض).

The objects of the work are arranged in alphabetical order It appears from the colophon that the present copy is an autograph written by the author in A.H. 898 = A.D 1294 as stated in the Colophon :—

قد فرغ من تحريره مؤلفه العبد محمد بن يوسف في سنة ثمان و تسعين و ثمانمائة

The work and the author are not mentioned in *Brock.* For another work of the same author entitled *Baḥr al-Jawāhir* (بحر الجواهر) see *Loth. Catalogue* No. 1024, p. 283, and *Ashburner MSS. Catalogue* by Messrs. Browne and Ross, p. ccviii. *Berl. Library Catalogue*, No. 6239 and *Stewart Catalogue*, p. 135, No. XXVI. Two copies of the work are in the *A.S.B. Lib.* See *Cat.*, p. 83, and *A.S.B. Govt. First Collection*, p. 6, No. 101. The work *Bahr al-Jawāhir* was edited by Ḥakīm 'Abd al-Majīd in Calcutta in 1830 A.D. See *Br. Mus. Catalogue of Arabic Books*, *Vol. II*, p 279.

Written in clear Naskh except the 1st fol. which is written in Ta'līq. The headings are in rubric. Slightly worm-eaten throughout but fols. 63—66 are bored through in the middle.

---

[1] For fuller details of the work see my Urdū article, published in the *Aligarh Institute Gazette*, 13th June 1917.

[2] For author and his other works see *Br. Mus Persian Cat.*, p. 475, *Ind. Office Lib. Cat* No. 2304, *H. Kh.*, Vol. II, p 564, *Cambridge University Cat.* by Prof. Browne, p. 278, and *O.B.D.*, p. 264.

Beg : — الحمد للّٰه الذي ارسل رسوله بالهدى الخ

(Bahādur S͟hāh, Moc͟higate, Lahore.

156

تنقيح المناظر[1]

A work on optical science.

The author flourished in the 8th century of the Hijrah. He was a pupil of Quṭb al-Dīn Maḥmūd B. Mas'ūd S͟hīrāzī (*d.* A.H. 710 = A.D. 1312, *vide Brock.*, Vol. II, p. 211) as stated in the preface, fol. *2b*.

I cannot throw much light on the life of the author except what appears in his preface regarding himself and his work. He is a commentator of *Kullīyāt al-Qānun* and wrote a *Tanqīḥ* on the book of Apollonius[2] (اللونيوس النجار) entitled *Mak͟hrūṭāt* (*vide* MS., fol. *3b*). The work appears to be an excerpt from Ibn Hayt͟ham's[3] *'Taḥrīr al-Manāẓir* or a commentary upon it Ibn Hayt͟ham died in A.H. 430 = A.D. 1038. See *Brock.*, Vol. I. p. 470, where the name of the commentator Kamāl al-Dīn Abu'l Ḥasan al-Fārsī (*d.c.* A.H. 700 = A.D. 1300) is given, but the title of the commentary is wanting, which however appears in fol. *3b* of the MS. under notice. Kamāl was a contemporary of Mas'ūd the preceptor, hence it may be inferred that he was the commentator of the *Tanqīḥ* according to *Brock.* Ibn Hayt͟ham has divided his work into seven Faṣls and the author added a *Khātimah* (خاتمة) *Ẓayl* (ذيل) and *Lawāḥīq* (لواحق) ; *vide* fols. *4a* and *4b*.

It contains diagrams illustrating the optical laws. The work is very interesting but worm-eaten throughout, especially some fols. at the beginning, and a portion of last fol. is pasted.

Written in clear Nask͟h. Undated ; apparently 11th century of the Hijrah. 'Unwān is illuminated. One copy of the work is in the Rampore library. Another copy of the MS. has been presented by Nawwāb 'Imād al Mülk to the *Anjuman-Taraqqī Urdū*, Hyderabad, as appears from its *report* 1916 p 16.[4]

Beg :—الحمد للّٰه نور الانوار و مظهر عجائب الاسرار و واهب السمع و الابصار الخ -

(Bahādur S͟hāh, Moc͟hīgate, Lahore.)

---

[1] For fuller details of the work, see my Urdū article, published in the *Aligarh Institute Gazette*, 23rd May 1917.

[2] For Apollonius and his works see *Tārīk͟h al-Hukamā'* of Qifṭī, pp 61-2.

[3] For Hayt͟ham see *Nadwah* 1911, No. 1, pp. 15 and 32, *Iktifā al-Qanū'*, p. 247, *Tamaddun-i-'Arab* (Urdū) of Sayyid' Alī Bilgrāmī, p. 433, '*Uyūn al-Anbā' fī Ṭabaqāt al-Aṭibbā'*, Vol. II, p. 90, *Tārīk͟h al Hukamā'* by Qifṭī, p 65, and *Loth Cat.*, p. 212, No. 734, III.

[4] There is another copy of the work in the library of Iḥsān al-Dīn, Maulavi Maḥallah, Kākūrī, Lucknow.

C.

NOTES ON IMPORTANT PERSIAN MSS.

I.

VARIOUS READINGS OF THE QUR'ĀN.

1.

درة الفرید

A tract on the correct readings of the *Qur'ān*.
Author:—Ḥāfiẓ Kalān Bukhārī ?
Dedicated to 'Abd-Allāh Bahādur Khān. Written in Ta'līq Not dated.

Beg:— فهرست رسالهٔ فرید است   ان گنج سخن که نورسیده است

(Shāh Md. Muḥaddith Lib., Rāmpore.)

2.

القول المجید لتجوید کلام الله المجید

On the various readings of the *Qur'ān*, by Raḍī al-Dīn Abu'l Khayr 'Abd al-Majīd, composed in A.H. 1022 = A.D. 1613. Writen in good Ta'līq. Not dated.

Beg:— بجودک جودني فی القرآن الحکیم - الحمد لله ... بدان
بهره مند کناد داور یزدان گوینده و شنوندگان راز ثمرات الخ

(R S. Lib.)

3.

مبسوط

A work treating of the various readings of the seven recognized *Qur'ān* readers, by Md. B. Maḥmūd B. Md. B Aḥmad B. 'Ali al-Sharīf al-Samarqandī al-Baghdādī ? It is divided into 30 chapters. The copy is imperfect at the end. Written in Ta'līq, by different hands. Dated A.H. 1101 = A.D. 1689.

Beg:— الحمد لله الذي اذاق قلوب العارفين حلاوة تلاوة الآيات
و البينات الخ

(Aḥmad-Allāh Lib., Moradabad.)

4.

مرسوم الخط موسومه تجوید لا ینفک

A treatise on the correct readings of the *Qur'ān*, by Mullā Md. Ṭāhir. Written in fine Naskh within gold-ruled borders. Dated A.H. 1083 = A.D. 1672.

Beg:—الحمد لله رب العالمین ... بر قاریان این قرآن مجید ربّاني - الخ

(R. S. Lib.)

5.

مطلوب القاري

A versified treatise on the various readings of the *Qur'ān*, by Ḥāfiẓ Rūmī B. Yūsuf al-Ẓahīr, composed in A.H. 776 = A.D. 1374 at Khwārizm.[1] The total number of verses is 780 as stated:—

هفصد و شصت و شش از هجرت بدو ماه صفر
شد تمام این نظم در خوارزم با خیر و ظفر
هفصد و هفتاد آمد جملهٔ ابیات این
هفت کم از چار صد از شاطبي کم یقین
نام این مطلوب قاري ناظمش عبد فقیر
حافظ رومي محمد ابن یوسف الظهیر

Written in neat Ta'līq. Not dated.

Beg:— ابتدا کردم بلفظ پاک بسم الله باز
خواستم یاري ز رحمٰن و رحیم بی نیاز .

(R. S. Lib.)

II.

COMMENTARIES ON THE QUR'ĀN.

6.*

اساس العلوم

A short glossary of the *Qur'ān*, arranged alphabetically.

Author:—Ḥākīm B. 'Imād Nāgūrī ? Written in bad Ta'līq. Not dated.

---

[1] For Khwārizm see *Mu'jam al-Buldān*, Vol. II, p. 54.

Beg :—الحمد لله مي گويد اضعف العباد حاكم بن عماد ناگوري... الخ

(R. S. Lib.)

7.

تفسير ثمانية

A commentary upon eight chapters of the *Qur'ān* from قدر to همزة (chapter 97 to 104) by Md. B. Maḥmūd al-Ḥāfiẓī al-Buk̲h̲ārī, who died according to *Nafaḥāt al-Uns* (of '*jāmī*') in A.H. 865 = A.D. 1460, but according to *Berl. Lib. Cat.* 850 = 1446. The MS. was transcribed, as stated in the colophon, from a copy which was transcribed from the author's copy in A H. 1181 = A.D. 1767 :—

قد وقع الفراغ من تحرير هذا التفاسير على يد محمد سعيد فلجلي
سنة ١١٨١ هجري و كان المنقول عنه بخط المصنف

Written in bad Ta'līq.

Beg :—الحمد لله رب العالمين .. يقول الفقير محمد بن محمود الخ

(R. S. Lib.)

8.

تفسير زاهدي

A commentary upon the *Qur'ān* by Aḥmad B Ḥasan B. Aḥmad Sulaymānī (d. A.H. 658 = A.D 1259), composed in A.H. 519 = A.D. 1125. For details and other copies see *Maḥbūb al-Albāb* p. 89, *O. P. Lib. Pers. Cat.* (Bankipore), and *Govt. Ind. Collection, part I*, p. 13. No. 210.

Scribe.—Bahā'al-Dīn B. Yūsuf al-Qattāl al-G̲h̲ūrī. Dated A.H. 980 = A.D. 1572.

Beg :— الحمد لله الذي انزل القرآن نورا مضيا الخ

(R. S. Lib.)

9.

تفسير شاهي

A commentary upon the first three chapters of the *Qur'ān*, by Aḥmad B. 'Abd Md. B. Sulṭān 'Alī B. Fatḥ-Allāh al-Badak̲h̲shī. The date of composition is A.H. 1057 = A.D. 1647, as appears from the chronogram شاه تفاسير in the preface, fol. 2. :—

سميت هذا التفسير بتفسير شاه و شاه تفاسير و هما التاريخان اللذ ن نظمتها
في وزن الرباعي .

می گفت یکی مرا که تاریخ بجو تفسیـــر شاه را گفتم که همو
تفسیر شاه یک عددي کم آمد گفت این دل من شاه تفاسیر بگو

Written in a very fine Ta'līq, within gold-ruled borders. 'Unwāns illuminated. The MS. also contains a short tract on Sufism.

Beg. :— الحمد لله الذي له كلمات لطيفة و فيها نكات نفيسة

(R. S. Lib.)

10.

تفسیر علي عظیم

A commentary upon half of the second chapter of the *Qur'ān.*

Author :—'Alī 'Aẓīm Khān (?). Slightly imperfect at the beginning. Written in Ta'līq. Not dated.

Beg. :— .... لیل و نهار - تفسیر مطري از سپاس آفریدگار
... اما بعد برانٔ هان ذاکیه الخ

(M. Mirzā Md. 'Alī Khān Lib., Victoria Street, Lucknow.)

11.

ترجمه تفسیر طبري

A very old and valuable copy of Persian translation of the Arabic commentary of Abū Ja'far Md. B. Jarīr al-Ṭabarī (d. A.H. 310 = A.D. 922) upon the first three and a portion of the fourth chapter of the *Qur'ān.* The first preface is in Arabic, comprising about 2 pages, and begins thus :—

الحمد لله الذي حمد في الكتاب نفسه وافتتح بالحمد كتابه و جعل الحمد
اول محل نعمته و آخر جزاء معصية الذي من حمده في كتابه الناطق على
لسان عبده و رسوله الصادق - الخ

The second in Persian opens thus :—

و این کتاب تفسیر بزرگ است از روایت محمد بن جریر الطبري الخ

The text is written in beautiful bold Thulth (ثلث) character and the commentary in fine Ta'līq. Most of the headings are written with gold in bold Kūfī character. All *Āyats* and *Rukū's* are beautifully illuminated with floral designs. The first two folios are sumptuously illuminated. The MS. breaks off with the following words :— و قل لهم في انفسهم قولا بليغا -

The copy is not dated, but apparently it was written about A.H. 600 = A.D. 1203. For details and another copy see *Br. Mus. Pers. Cat.*, p. 8*b*. and *Ḥ. K͟h.*, Vol. II, p, 346.

(R. S. Lib.)

12.

تفسیر مصطفوی المعروف ببحر العلوم الاسلامیّة

A very extensive commentary on the *Qur'ān* in two volumes, by Ḥāfiẓ G͟hulām Muṣṭafā B. Md. Akbar Thānīsarī.[1] The author states in the preface that he composed this work at the request of some of his friends:—

دريںولا بعضی اعزّه و مخلصان مثل محمد عاشق وغيره بجد تمام محرک این فقیر بر آن شدند الخ

Besides the commentary the author has left the following five works:—

حالات شيخ عبد القادر رح - شرح مدايح القادريه - مدايح القادريه عربي - سه رسالجات در تصوف - طب مصطفوي

The following versified chronogram in fol. 3 gives the date of composition A.H. 1191 = A.D. 1777.

هست تاریخ سال اتمامش   عز تفسیرها ببحر علوم

It is divided into eleven subjects:—

- تفسير - قرأت - (تجويد) - علم وقوف قرآن - علم رسم خط قرآن

- حديث نبوي - حقايق و معرفت - سلوک - تصوف - فقه - عقايد اهل سنّت

Transcribed from the author's copy in A.H. 1252 = A.D. 1836 as mentioned in the colophon:—

چونکه فارغ گشتم از تحرير تفسير قرآن
در جمادي دوم روز جمعه وقت سرور
خواستم تاريخ او از ملهم غيبي بگفت
کز عدم تاريخ غمها دور آمد بالضرور
نسخه از خط مصنف بود کزوی نقل شد
نسخه ام از خط من ای صاحب عقل و شعور

Scribe:—G͟hulām Muḥyī al-Dīn B. Ḥāfiẓ B. Bahā'al-Dīn. Written in Ta'līq.

Beg.:— الحمد لله الذي هدانا بانزال کتابه الی صراط مستقيم الخ

(R. S. Lib.)

---

[1] Thānesar, a famous Hindū place of pilgrimage to the north of Delhī (see Vincent Smith's *Akbar*, p. 78, and *Ā'īn Akbarī* text, Vol. I, p. 515).

13.

تفسیر جزء النبا

A versified commentary (in Sindhī language) upon the جزء النبا (chapters 78-114) of the *Qur'ān*, by Hāshim Thattanī (?). Written in Naskh. Not dated.

Beg. :— سب سا راه ته رب ئي جو خالق خلقهار - الخ

(al-Nadwah Lib., Lucknow.)

14.

نظم الجواهر و نقد الفراید

The second and third volumes of a very useful and extensive commentary on the *Qur'ān* with a glossary, arranged alphabetically by Walī-Allāh of Farrukhābād, the author of *Tārīkh-i-Farrukhābād*. See for author *Br. Mus. Pers. Cat.*, p 959*b*. The author commenced the work in A.H. 1233 = A.D. 1817 and completed it in A.H. 1242 = A.D. 1826 according to the chronogram in the colophon :—

چو این نظم الجواهر یافت ترتیب   پسندیدند احباب و البّا
اگر میل سوی سال شروع است   ز مغنی الطالبین دریافت فرما
۳۳ ۱۲
ز اکمال نظر چون گشت فارغ   پی تاریخ شد از غیب ملهم
۱۲۴۴
که اکمال نظر تاریخ باشد   دگر مغرب فان الیوم قد تم

Vol. II contains the 16, 17 and 18 chapters :—

باب شانزدهم - شرح مفردات قرآنیه ببیان معانی لغویه مع بیان اشتقاق و تعریف بعضی ازانها بقدر مناسب - (۱۷) شرح مبهمات قرآن شریف که از ثقات منقول است بترتیب سور - (۱۸) شرح مرکبات قرآنیه باعراب و معانی و بیان و ترجمه اکثر آیات بملاحظه وجوه راجحه در ترکیب و دیگر عواید فواید ضروریه نافعه مع تنبیه الخ

Vol. III contains the 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, and 30 chapters :—

(۱۹) در قصص انبیاء مذکورین در قرآن مجید - (۲۰) ذکر آیات اسباب نزول آیات کریمه که ایمه تفسیر و حدیث روایت کرده - (۲۱) ذکر عقاید اسلامیه که مستنبط گشته از آیات کریمه - (۲۲) شرح ناسخ و منسوخ آیات

قرآنیه که جهابذه رواة حق آن ادا نموده - (۲۳) تفسیر آیات قرآنیه که احکام فقیه از انها مستنبط گشته بترتیب کتب فقه حنفیه - (۲۴) در مهلکات و منجیات که ارباب قلوب اتباعا لکلمات الله بتحقیقات آنها پرداخته - (۲۵) در تفاسیر مأثوره از حضرت صلی الله علیه و سلم و مروبه از صحابه رض و منقوله از اعلام مفسرین و اجلا و علما رح - و دیگر غرایب و فواید مبین - (۲۶) ذکر پارهٔ از بدایع لفظیه و معنویه که اشتمال کلام الهي بر انها بدریافت رسیده اگرچه در مفتاح و تلخیص در فن بدایع الخ - (۲۷) در امور متعرفه متعلقه قرآن مجید - (۲۸) جوابات و سوالات بر کلام الهي - (۲۹) چند اشیای مرتبطه بتفسیر فرقان حمید - (۳۰) در طبقات اعلام که نسبتی با کلام ملک علام دارند و تا آخر سنه الف هجریه بترتیب سنین و قات برسبیل ایجاز مذکور شوند و آن پنج گروه اند قراء و مفسرین و محدثین و فقها و اهل عربیت -

The first volume which contains 15 chapters is wanting. Written in Ta'līq. Dated A.H 1253 = A.D. 1837.

Beg. :— باب شانزدهم شرح مفردات قرآنیه -

15.

تفسیر سورهٔ یوسف

An extensive commentary upon the سورهٔ یوسف, chapter 12, by Mu'īn al-Miskīn, the author of *Ma'ārij al-Nubūwat*, who died in A.H. 907 = A.D. 1501. See *Ind. Off. Lib. Cat.* No. 138. For another copy see *Govt. Ind. Coll., part I, p.* 13, *No.* 215 (*A.S.B.*). Written in Ta'lîq. Not dated.

Beg. :— الحمد لله نحمده .... بنده ضعیف مسکین معین مسکین الخ

(Md. Muḥaddith Lib., Rampore.)

16.

امارات الکلام الرحماني

A complete index to all the *Āyats* and *Rukū's* of the *Qur'ān*, arranged alphabetically.

Author :—Ibn Md. Sa'īd Muṣṭafā, known as مقرب خان. The title of the work is a chronogram for the date of composition A.H. 1105 = A.D. 1693. Written in Naskh. Not dated.

Beg. :—محامد حسنٰی و اثنیه اسني سزاوار حضرت صمدیت است
که کواکب کلمات فرقاني داور بروج سور و منازل آيات قرآني لمعان ظهور
داده - الخ

(R. S. Lib.)

17.

خواصّ سُور القرآن

The peculiar characteristics of each chapter of the *Qur'ān*, by an anonymous author.

Written in Arabic Naskh. Dated A.H. 700 = A.D. 1300.
Scribe —Yaḥyā Md. al-Ṭūsī (?).

Beg. :— سورة فاتحة الكتاب - هرکه مداومت کند بر خواندن - الخ

(M. A. Bārī Lib., Firangī Maḥall, Lucknow.)

III.

TRADITIONS.

18.

ترجمهٔ منظوم چهل حدیث .

A very extremely valuable versified translation of the collection of the forty Ḥadīth, by Mīr Shaykh B. Nūr al-Dīn Md. al-Yūrānī, composed in A.H. 929 = A.D. 1522.

The illumination on each page is noteworthy for its beauty. Written in very good Ta'līq. Dated A.H. 1221 = A D. 1806.
Scribe :—Ashraf 'Alī Khān of Lucknow.

Beg. ·—الحمد لمن اظهر نبوة حبيبه فی الاربعين ... از ادای حمد
و ثنا و درود الخ

(R. S. Lib.)

19.

چهل حدیث

A collection of 40 Ḥadīth with a Persian translation by one Ḥakīm Ṣūfī. Written in a very good Ta'līq in A.H. 1039 = A.D. 1629. The first folio is wanting.

(Maḥbūb Yār Jang Lib., Hyderabad.)

IV.

THEOLOGY.

20.

ارشاد المسلمين

A commentary on the famous Arabic theological work عقائد نسفي of 'Abd-Allāh B. Aḥmad an Nasafī (d. A.H. 710 = A.D. 1310). Commentator :—Burhān Miskīn (probably Mu'īn, see No. 15). Composed in A.H. 914 = A.D. 1508 in Hirāt as mentioned in the preface, fol. 4 :—

تا در سنه اربع عشر تسعمأته در قبة الاسلام هراة الخ

Written in Ta'līq. Not dated.

Beg. :—ربنا آتنا من لدنک رحمة ... الحمد لله الذي جعل السنة الخ .

(R. S. Lib.)

21.

تذكرة العقايد

A collection of 130 principles of theology, by M Naṣr-Allāh B. Shaykh Niẓām. Composed by order of 'Ālamgīr (A H. 1069-1119 = A.D. 1659-1707). It is divided into a *Muqaddamah*, 5 Bābs and a Khātimah. Written in good Ta'līq, within gold-ruled borders. Dated A.H. 1123 = A.D. 1711. The fly-leaf bears two seals, one of 'Ālamgīr, and another of Ghaḍanfar Khān Āzād, folls. I and II, highly illuminated.

Beg. :—دکرمک نستعين با كردم المستعان - بهترين كلاميكه طوطيان
گلشن قدس گويا شوند

(R. S. Lib.)

22.

حشر نامه

A treatise on the signs and prognostics of the day of judgment and the appearance of Imām Mahdī, by 'Alī B. Ḥusām al-Dīn, known as 'Alī Muttaqī al-Hindī[1] (d. A.H. 977 = A.D. 1569). For author and his Arabic works see *Brock.*, Vol. II, p. 384, and (No. 32) It is divided into 4 *Faṣls* :—

(۱) درجبلت و نسبت امام مهدي ... يکی آنست که از سادات حسيني
باشد - (۲) در ذکر آبقی که مخصوص بمهدي است (۳) از نشانيهای که

---

[1] See for 'Alī Muttaqī *al-Nadwah*, Nov. 1910, Vol. 7, pp. 26-28.

پیش از مهدي در عالم پیدا خواهد شد (۴) در چیزهای که واقع خواهد شد
از خروج مهدی

Written in Shikastah-Āmīz Nasta'līq. Not dated.

Beg. :—الحمد لله رب العالمین ... اما بعد میگوید ... این چند
علامات است - الخ

(R. S. Lib.)

23.

حیوة النفس

A treatise on Ismā'īlī theology, by Aḥmad B. Zayn al-Dīn al-Iḥsā'ī ?.

It is divided into a Muqaddimah, five chapters and a Khātimah. Written in minute Naskh. Not dated.

Scribe :—'Alī Asghar B. Ḥusayn Karbalā'ī.

Beg. :—الحمد ... فیقول احمد ... انه قد التمس مني بعض
اخوان الدین

(W. Ivanow's[1] collection.)

24.

رسالة اشتابگر راجه جنگ بدیه

A dialogue between Rājah Jang Badīh and his father on metaphysical doctrines, translated from Sanskrit into Persian at the desire of 'Dārā Shukūh (d. A.H. 1069 = A.D. 1658). The work is divided into eight chapters (فصل). The title of each chapter is given in Sanskrit with its Persian explanation as follows :—

(۱ نُعل) یعنی مورد دنیا برغبت (۲ مایا) غفلت از سلک سلوک (۳ دنبه)
خود آرائی وغیره (۴ مان) صور دماغ بزرگي بر خود (۵ مُل) کثیف طبع (۶ مد)
سراپا بیهوشي از هوش (۷ دومله) حق نیوش از نیک بر گشته و کمر بر بدي
بسته (۸ داک) خواهش کمال بر چیز نامیسر داشتن و از نا یافت آن ملال
و پریشان بودن و بر قسمت نا مقتضی شدن و راضي نبودن باو

Written in fine and minute Nasta'līq. Dated 19th year of 'Ālamgīr's reign = (A.H. 1087 = A.D. 1676). Gold-ruled borders. 'Unwān illuminated. Scribe :—Rūpchand.

---

[1] Mr. W. Ivanow is a Russian traveller. He had a collection of Persian MSS. acquired in Persia. He came to Calcutta in 1914.

Beg. :—سجدات لا نهایت بآن لا نها یات که عالم و عالمیان از قطرة - الخ

(M. A. Bāsiṭ Lib., Hyderabad.)

25.

نظام العقاین

A work on theology, by Fakhr al-Dīn Awrangābādī. The author composed this work at the request of some of his friends at Pāk Patan, which contains the tomb of the celebrated saint Farīd al-Dīn[1] Shakargange (d. A.H. 664 = A.D. 1265). Written in Ta'lîq. Dated A.H. 1277 = A.D. 1860.

Beg. :— حمد بیحد و ثنای بیعد مر خالق ودود الخ ...

(R. S. Lib.)

V.

SUFISM.

26

اسرار المجذوبین

A work on religious instructions and precepts, by Md. Ismā'īl B. Mas'ūd 'Alī, known as Sajān Lāhūrī, composed in A.H. 771 = A.D. 1369. Scribe :—Raḥīm-Allāh Ākhūnd. Written in Ta'līq. Dated A.H. 1166 = A.D 1752.

Beg. :—سپاس و ستایش خدایرا عز و جل که در وجود آرندهٔ
خلایق است - الخ

(R. S. Lib.)

27.

اسطر الغیبیة

An anonymous work on Ṣūfism without author's name. From the following note at the end the title of the MS. and the name of the author might be inferred :—

ت هذه الاسطر الغیبیة في سلخ محرم الحرام سنه ۹۳۵ هجري (۱۵۲۸ م)
و انا العبد الفقیر حسن علی بن حسین علی مروي

In the preface the author says that on the 6th of Shawwāl A.H. 871 = A.D. 1466 when he was going through the

---

[1] For Farīd al-Dīn's life see *Khazīnat al-Aṣfiyā* (by Muftī Ghulām Sarwar), Vol. I, p. 287.

جام جهان نمای [1] of Md. S̲h̲īrīn Mag̲h̲ribī [2] (d. A.H. 809 = A.D. 1406), he was so attracted by its beauty and utility that he determined to write one on the same lines as the above work. Written in elegant Ta'liq. Dated A.H. 935 = A.D. 1528.

(M. A. Bāsiṭ Lib., Hyderabad.)

28.

اشراق الدرجات

An extensive work treating of the daily prayers and other religious observations, etc., by 'Abd al-G̲h̲afūr B. Md. S̲h̲araf, known as Luṭf Rasūl (?) It is divided into 21 chapters, which are subdivided into 108 Faṣls and the Faṣls into 51 Fawā'id (فواید) and a K̲h̲ātimah. Written in good Ta'līq. Not dated.

Beg. :— مصلی قلم بوضو از آب مداد بر سجادهٔ صفحهٔ نماز تحریر
عنوان بالحمد لله رب العالمین آغاز گردانید الخ

(Mata Parshad, Nawāzgange, Lucknow.)

29.

انيس الصالحين

A rare and autograph work on Ṣūfism, by Jamāl al-Dīn (?). Written in Nasta'līq. Dated A.H. 1150 = A.D. 1737.

Beg. :— نحمد لله حمد جميع الحامدين الخ

(Niẓām Lib., Hyderabad.)

30.

انيس العارفين

A work on Ṣūfic doctrines, compiled by Ḥabib-Allāh of Qinnawj. It is divided into a Muqaddimah, 17 Maqāṣid and a K̲h̲ātimah. Written in bad Ta'līq. Dated Ilachpore, A.H. 1113 = A.D. 1701.

Beg. :— حرمي نه حرمي بلكه محرمي نه حرمي نه محرمي
…… الهي چون حبيب الله نام كردي عدو الله نگرداني الخ

(R. S. Lib.)

---

[1] For *Jām-i-jahān Numā* see *Br. Mus. Pers. Cat.*, p. 866^a, where the copy is mentioned to be without author's name.

[2] For S̲h̲īrīn Mag̲h̲ribī see same p. 633^a, and *Sprenger Cat.*, p. 476.

31.

انیس القادریه

An autograph epistolary collection of mystical subjects addressed to the followers of the Qādirī order, by Bahā' al-Ḥaqq Qādirī, written by his own hand in the time of Md. Shāh (A.H. 1131-1161 = A.D. 1719-1748) :—

لهذا کمترین غلامان سلسلهٔ عالیه برای توشهٔ آخرت انیس القادریه تالیف نمود ... تمت الکتاب ... یوم الجمعة ۲۲ - ربیع الثانی بخط مصنف ... وی سنة الهجریّه یکهزار و یکصد وسی و هشت ... در دار الخلافة شاهجهان‌آباد و عهد سلطنت ... محمد شاه بادشاه ......

Written in Shikastah-Āmīz Ta'līq. Dated Shāhjahānābād, A.H. 1138 = A.D. 1725.

Beg. :— ای کمینه بخششت ملک جهـــان
من چه گویم چون تو میدانی نهان

ای ذرویش قادریه و ای حلقه بگوش این سلسلهٔ علیه ای غلام خدام حضرت غوث اعظم الخ

(R. S. Lib.)

32.

جواهر الثمینة

A treatise on Ṣūfism, by 'Alī B. Ḥusām al-Dīn al-Muttaqī al-Hindī (d. A.H. 977 = A.D. 1569). (For his life and works see *Brock.*, Vol. II, p. 384, *Nadwah* 1910, Vol. VII, pp. 26-28, and for another Pers. work see *Pers. Note* (No. 22). The chapters are arranged alphabetically. Written in a good Ta'līq. Dated A.H. 1287 = A.D. 1870.

Beg. :— الحمد للّٰه رب العالمين ...... چون فقیر کتابی تالیف کرد نام وی جوامع الکلم فی المواعظ و الحکم است و آن تالیف است مشتمل بر سه هزار حکم الخ

(R. S. Lib.)

33.

خلاصة الاسرار

A work on Ṣūfism according to the doctrines of the Shuṭṭārī order, by Ṣūfī B. Jawhar Jhanjhānī. Written in fine Ta'līq. Dated A.H. 1066 = A.D. 1655.

Beg. :— حمد و ثنا و تعظیم و سجده آن ذات پاک بیچون را که محیط و ساري ...... این رساله است مسمّی بخلاصة الاسرار در کشف مشرب شطاریه بر سلوک اهل عرفان الخ

(R. S. Lib.)

34.

دقایق المعاني

A very instructive work on Ṣūfism, composed in A.H. 825 = A.D. 1421.

Author :—Md. Ja'far al-Ḥusaynī al-Makkī (d. A.H. 891 = A.D. 1486). For author and his other works see *Khazīnat al-Aṣfiyā*, pp. 402-405, where from the following quotation it appears that the work was only promised, and was not seen by the author of the *Khazīnat al-Aṣfiyā* :—

و کتاب دیگر یعني دقایق المعاني و حقایق المعاني نیز وعده میکند آیا تصنیف یافته اند یا نی

For another work entitled *Baḥr al-Ma'ānī* by the same author, see *Ind. Office Lib. Cat.* No. 1867. Written in ordinary Nasta'līq. Dated A.H. 1194 = A.D. 1779.

Beg. :— حمد نامحدود و درود بیحد بران الخ

(M. A. Bārī Lib., Firangī Mahall, Lucknow.)

35.

رساله اطوار

A treatise on Ṣūfism, by Ṣūfī Sharīf Jhanjhānī(?). It is divided into ten Aṭwār (اطوار).

It appears from the colophon that this work was translated from Hindī into Persian.

Scribe :—Sadā Shanker. Written in good Ta'līq. Dated A.H. 1159 = A.D. 1780.

Beg. :— حمد و ثنای لایق ذات خدائیست ... (الخ طور اول) در تجرید الخ ...

(M. A. Bārī Lib., Firangī Maḥall, Lucknow.)

36.

رسالهٔ خواجه عبد الله الانصاري

A very valuable copy of the well-known religious tract of the celebrated saint 'Abd—Allāh al-Anṣārī al-Haravī[1] (d. A H 481 = A.D. 1088), consisting of pious invocations to God and exhortations to Sūfis, and is due to the penmanship of the famous calligrapher Sulṭān 'Alī al-Mashhadī.[2] It is dated A.H. 921, and is remarkably noteworthy for the exquisite workmanship in its illuminations and decorations. It has acquired an additional value by virtue of the notes written in it by the Mughal Emperors Jahāngīr (A.H. 1014-1037 = A.D. 1605-1628), Shāh Jahān (A.H. 1037-1069 = A.D. 1628-1659) and the celebrated Abd al-Rahīm Khānkhānān[3]

(1) On the fly-leaf at the beginning, Jahāngīr, in his following note, says that he received this valuable MS. as a present from the Khānkhānan in A.H 1023 = A.D. 1614 :—

رسالهٔ خواجه عبد الله الانصاري خط ملّا سلطان على از پیشکش خانخانان

بتاریخ ۲۴ جمادى الاول سنه ۱۰۲۳ هجري - حرره جهانگیر ابن اکبر بادشاه غازي -

For another autograph note of Jahāngīr see *O.P. Lib. Cat*., Vol. I, No. 151.

(2) The above note is followed by that of Shāh Jahān, in which the Emperor says that the MS. was received in his library on the very day of his accession to the throne, viz. the 28th day of Jumādā II, A.H. 1037 = A.D. 1627 :—

بسم الله الرحمن الرحیم - بتاریخ بست و پنجم ماه بهمن الهي موافق
هشتم شهر جمادى الثانیه سنه ۱۰۳۷ هجري که روز جلوس مبارکست داخل

---

[1] For 'Abd-Allāh al-Anṣārī's life and his works see *Brock.*, Vol 1, p 433, *Br. Mus. Pers. Cat.*, p 349, *Ind. Off. Lib. Cat.* Nos. 1778–1780, *Iktifā' al-Qunū'*, p. 53.

[2] 'Alī Mashhadī, who was called '*Sulṭān*' or *Qiblat al-Kuttāb* on account of his mastery in the art of penmanship, is acknowledged to have brought the Nasta'līq handwriting to perfection. He died according to the *Mir'at al-'Ālam* in A.H 902 = A.D. 1496 and according to the *Ḥabīb al-Siyar* in A.H. 919 = A.D. 1513; but both these dates are incorrect and anachronistic, as the *Resālah* under notice was written in A.H. 921 = A.D. 1515. See *Br. Mus. Pers. Cat.* p. 573^a, *Columbia University Cat. of Pers. MSS.*, Vol. I, p. 160, *Tazkirāt al Salāṭīn* (MS. copy, Bohār Coll.), Vol. I, fol. 125. Hurt, *Les Colligraphes et les minituristes de l'Orient musulman*, pp. 221–323, Martin, *Meisterwerke Muhammedanischer Kunst*, 1, plates 23, 31, Munich, 1912, and *O.B.D.*, p. 391, and *Pers. Notes* No. 101, footnote No. 1, and No. 239, foot-note No. 2, and J.A.S.B. 1834, Vol. III, p. 12, for the life and other transcriptions of the calligrapher.

[3] Khānkhānān also had a magnificent library at Ahmadabad. He was a great lover of MSS, and paintings. See for his life *Ma'āthir-i-Raḥīmī* (MS. copy of the *A.S.B. Lib.*), fol. 480, *O.P. Lib. Cat.*, Vol. II, p. 79, and *Maqālāt-i-Shiblī*, p. 135.

كتابخانۀ این نیازمند درگاه شد - حرره شهاب الدین محمد شاه جهان ابن
جهانگیر شاه بن اکبر شاه -

For another autograph see *O.P. Lib.*, Vol. I, No. 93.

(3) ‘Abd al-Raḥīm Khānkhānān, the celebrated nobleman of Akbar's Court, in his note written longitudinally on the fly-leaf, gives to understand that he became the owner of this MS in A.H. 998 = A.D. 1589 :—

در تاریخ سنه ۳۵ الهي موافق سنه ۹۹۸ هجري این کتاب داخل عاریتهای
که دو روزي زمانه باین بیچاره سپرده - دوست نیکان و خاک پای ایشان
عبد الرحیم ابن محمد بیرم عفي عنهما -

For another autograph see *O.P.Lib. Cat.*, Vol. I, No. 93.

The MS. also bears the seals of Shāh Jahān, ‘Ālamgīr and the Khānkhānān. It is carefully preserved in a splendid binding.

Beg. :— الحمد لله علی نواله ...... اما بعد چنین گوید پیر
بازاري - الخ

(R. S. Lib.)

37.

رساله مبدا و معاد

This is a collection of sayings of Aḥmad Sarhindī Fārūqī, better known as *Mujaddid-i-Alf thānī* (مجدد الف ثاني) (d. A.H. 1034 = A.D. 1626), a celebrated Darvīsh of the 11th century of the Hijrah and a disciple of Khwājah Bāqī *Naqshband* of Delhi. It appears from the following colophon that Md. Siddīq Badakhshī collected these sayings of the *Mujaddid*, who addressed them to his disciples in his *I'tikāf* اعتكاف[1] in A.H. 1019 = A.D. 1610 and that Badakhshī wrote it, as he says :—

قال العبد الضعيف الجامع لهذا النكات البديعة الرايعة محمد صديق
البدخشی الكشمي الملقب بالهداية - قد وقع الفراغ عن تسويد هذه المعارف
العالية الشريفة المسمّی بالمبدأ والمعاد في آخر شهر رمضان المبارک عين
الاعتكاف سنه ۱۰۱۹ الف و تسع عشر- [۱۶۱۰ع]

---

[1] Seeking retirement in a mosque during the last ten days of the Fast of Ramaḍān; during which time the worshipper does not leave the place, except for necessary purposes. The time is spent in reciting the *Qur'ān* and in performing the ceremony of *Ẕikr*, or the recital of the names and praises of the Deity. (*Vide* Hughes's Dictionary of Islam, p. 222*b*.

For *Mujaddid-i-Alf thānī* and the work see *Khazīnat al-Asfiyā*, Vol. 1, pp. 607 and 609, and Md. Siddīq, p. 483.

Beg. :— حمد الله فی المبدأ و المعاد - الخ

(M. ʻAlī Ḥusayn Lib., Kūcha-l-Madrasah-ī-Aʻizzarh, Hyderabad.)

38.

رياض الافياض

A rare and old tract on Ṣūfism, by Rashīd al-Dīn Md. Bīdāwarī. The author composed this work in the monastery (خانقاه) of Jamāl al-Dīn Jurjānī in A.H. 846 = A.D. 1442.

The work is incomplete and breaks off immediately after the 10th Section (واقعه دهم). Written in a good Nastaʻlīq. Undated.

Beg. :—الحمد لله الذي نور عيون الاعيان بانوار التجليات - اما بعد از نقدنم - الخ

(Mullā A. Bāsiṭ Lib., Hyderabad.)

39.

صحايف اللطايف

A short psychologico-mystical tract without author's name. It appears from the preface that the work is a translation from the Arabic original. The colophon shows that the MS. was transcribed from the autograph copy of Aḥmad B Md. B. Aḥmad al-Bayābāyākī, better known as ʻAlā'al-Dawlah al-Samnānī (d. A.H. 736 = A.D. 1336). See *Khazīnat al-Asfiyā*, Vol. II, p. 288, and *Ind. Off. Lib. Cat.* No. 1922, p. 1073*a*.

و هذا نقل من خط الفقير الى الله احمد بن محمد بن احمد البيا بابكي
المعروف بعلاؤ الدولة السمناني -

For another copy and details see *Bodl. Lib. Cat.* No. 1283. Written in good Nastaʻlīq. Not dated.

Beg. :— الحمد لله ...... خواستم تا لطايف قلبي و نفسي - الخ

(M. A. Bārī Lib., Firangī Maḥall, Lucknow.)

40.

ظواهر السراير

Lives and teachings of Saʻdī Lāhūrī, ʻAbd al-Raḥmān Salmī Nīshāpūrī and Sayyid Ādam Binnūrī Naqshbandī by Md. ʻUmar B. Ibrāhīm al-Nīshāpūrī. Written in Taʻlīq. Not dated.

Beg. :— الحمد لمن زين ظواهر الاولياء باتصافهم باخلاق الصمديّة

(Shāh Md. Muḥaddith Lib., Rampore.)

41.

عين المعاني

A work on Ṣūfism, by 'Isā B. Qāsim B. Rukn al-Dīn B. Ma'rūf B. Shihāb al-Dīn, better known ās *'Ishqī* al-Shuṭṭārī al-Qādirī, who lived in the year A.H. 997 = A.D. 1588. Defective at the end. Written in elegant Nasta'līq. 'Unwān illuminated, within gold ruled borders.

A.S.B. Lib. has a complete copy of the work: see *Pers. Cat.*, p. 56.

Beg. :— الحمد لله ...... انبعاث تعيين نعين

(M. A. Bāsit. Lib., Chādarghāt, Hyderabad.)

42.

مفتوح القلوب

An autograph collection of Persian letters, by Mīr Sulaymān, known as 'Alī Qulī Khān (?).

From the following lines at the end it appears that this is an autograph copy and was written for one 'Azīz Mirzā Md. Hādī :—

كتاب انشاء مفتوح القلوب اتمام يافت بتاريخ هفدهم شهر شوال المكرم
وقت بكپاس بعون الهي بپاس خاطر عزيز ميرزا صاحب كرمفرما ميرزا محمد
هادي صاحب سلمه الله تعالى - بخط عاصي مؤلف علي قليخان باتصرام رسيد -

Written in fine Shikastah-Amīz Ta'līq. Undated.

('Alī Ḥusayn Lib., Hyderabad.)

43.

مجموعهٔ عالمگيري

A work on Ṣūfism based on several reliable works enumerated at the beginning and divided into two parts.

Author :—'Abd al-Khālīq B. 'Aṭā-Allāh al-Anṣārī.

Written in neat Nasta'līq. Dated A.H. 1114 = A.D. 1702. I have seen another copy of this work at Hyderabad in the possession of a book-seller.

(Maḥbūb yār Jūng Lib., Hyderabad.)

44.

مكتوبات افغاني

One hundred and forty-seven letters on religious subjects written by Sayyed 'Alī B. Md. B. Ilyās Afghān Gharghashīshūn (عرفشيشون). Slightly defective at the end. Written in good Naskh. Not dated.

Beg. :—الحمد لله رب العالمين ... . و بعد ابن چند مكتوبات الخ

(Shāh Md. Muhaddith Lib., Rampore.)

45.

مكتوبات شيخ

A collection of thirty letters, containing spiritual admonitions addressed by 'Abd al-Jalīl of Lucknow to Miyān 'Āshiq Md. Written in Ta'līq. Dated Jahānābād, A.H. 1145 = A.D. 1732. Scribe :—Khalīl B. Md. Shākir B. 'Abd al-Rashīd.

Beg. :—جزء اول دربيان قول باري عزاسمه خلق السموات و الارض الخ

(Shāh Habib. Haydar Lib., Kākūrī.[1])

46.

همعادت

A famous treatise on the principles of Ṣūfism by Walī-Allāh B. 'Abd al-Raḥīm of Delhī (d. A.H. 1176 = A.D. 1762). Written in Ta'līq, by his son 'Abd al-Qādir [2] (d. A.H. 1242 = A.D. 1826) :—بدست فقير عبد القادر ابن مصنف الكتاب Dated A.H. 1187 = A.D. 1773.

Beg. :—الحمد لله الذي اصطنع طايفة ...... اين كلمه چند است
كه از سحايب الهام بر قلب اين شيفته

(R. S. Lib.)

VI.

PRAYER.

47.

حرز روشن

A treatise on prayer, by Nūr Beg (?).

It is divided into 4 Maqālāt :—

---

[1] For Shāh Habīb Haydar library see my Urdū article, published in the *Aligarh Institute Gazette*, 13th March, 1918. For a topography of Kākūrī see *Distr. Gaz.* of Lucknow, Vol. XXXVII, pp. 189-195.

[2] See for 'Abd al-Qādir's life *Tazkirah-i-'Ulamā'-i-Hind*, p.129

(۱) در اصول این علم و عمل (۲) در علم و عمل و خواص نقوش تکسیر وغیره (۳) در طریق نصاب و خواص و دعوت بعضی سور معظم قرآني و ادعیهٔ معموله مقربان بارگاه سبحاني و اسمای حسنای ربانی (۴) در بعضی اعمال ضروري مثل حب و بغض و تخریب و تذلیل ظالم مردم وغیره

It appears from the following line on fol. 178*b* that it is an autograph copy. Dated A.H. 1221 = A.D. 1806 :—

بدستخط خادم الفقراء نور بیگ ... سنه ۱۲۲۱ هجري ۔

Beg. of preface شکر بیقیاس مرهادی حافظی را الخ ۔

Beg. of text :— بدان ایدک الله که این جنگ مُسمی است بحرز روشن الخ

(R. S. Lib.)

VII.

MUHAMMADAN LAW.

48.

ازالة القناع عن وجوه السماع

A work relating to the legality of music, by M. Nūr-Allāh B. Md. Muqīm al-Dīn of A'ẓampūr, composed by the order of his spiritual guide Shāh 'Abd al-Raḥmān in A.H. 1244 = A.D. 1828. It is divided into a مقدمه and 3 افاده which are subdivided into ابواب. Written in clear Ta'līq. Dated A.H. 1255 = A.D. 1839.

Beg. :— الحمد للسميع الذي له الغناء و الشكر للغني الذي له الملك و البقاء

(Ḥāfiẓ Aḥmad 'Alī Khān Lib., Rampore.)

49.

زبدة الروايات

A Persian translation of Muhammadan law from Arabic, by Ghulām Ḥusayn of Ghāzīpore. Written in bad Ta'līq. Dated A.H. 1232 = A.D. 1816.

Beg. :— تحية كل حديث يرصع به مفتتح المرام و خلاصة كل خبر يوشح به صدر الكلام

(R. S. Lib.)

50.

طرفة الفقهاء

A versified work on Muhammadan law according to the Hanafite School. Author unknown. Composed in A.H. 785 = A.D. 1383. The author commenced the work at the age of 56 and completed it in five years. It is divided into 335 Nāmah and the number of verses is 15,200, as appear from the following verses :—

اول از عمر خویش شرح دهم   پس بتاریخ نامه خامه نهم
سال پنجاه و شش قلم راندم   پس بششم تمام گردانم
پنج سال اندرین شدم مشغول   هر روایت که دیدمی مقبول
آن همه اندرین در آوردم   نثر بودست نظم من کردم
سیصد و سي و پنج شد نامه   عدد ابیات آورد خامه
جمله شد پانزده هزار دو صد   در روایت ببین برون ز عدد
ختم کردم بهفتم شوال   بود هشتاد و پنج هفصد و سال

Nāmah 4 and 5 contain eulogies of Fīrūz Shāh (A.H. 752–790 = A.D. 1351–1384) and Naṣīr-al-Dīn Maḥmūd Dihlavī (d. A.H. 757 = A.D. 1356). Written in fine Ta'līq. Another incomplete copy is also here.

Beg. :—حمد ایزد نخست بر خوانم   نام پاکش سر زبان رانم

(R. S. Lib.)

51.

فتاوی امینیه

A collection of legal opinions, arranged under the usual headings of the Muhammadan law books, by Md. Amīn B. 'Abd-Allāh of Mu'minābād. Composed in A.H. 978 = A.D. 1570. It is an autograph copy as appears from a note in the colophon :—

قد فرغت من تاليفه و تسويده من السواد - تمت بعون الله تعالى و حسن
توفيقه بقبة الاسلام بلخ صانها الله تعالى عن الخلل و السلخ وقت الظهر ......
من ثمان و سبعين و تسعمأية - اما العبد المؤلف المفتقر الى الله الهادي
محمد امين بن عبد الله المؤمنا بادي -

Written in Naskh.

Beg. :—با دائما للفضل علينا بتوفيق محامدک - و بعد فيقول محمد امين بن عبد الله المؤمنابادي لما صرفت معظم عمري و عنفوان شبابي في ملازمة الفقهاء - الخ

(R. S. Lib.)

52.

فتاوی شیبانی

A collection of Muhammadan law compiled, as stated in the preface, at the request of Md. S͟haybānī K͟hān, king of K͟hwārizm (A.H 912–916), by ‘Alī B. Md. B. ‘Alī al-K͟hwārizmī.

Scribe :—‘Uthmān B. G͟haybī. Written in Nask͟h. Dated A.H. 912 = A.D. 1506. An index in a different hand is prefixed at the beginning.

Beg. :—حمد بیحدی که زبان قلم و قلم زبان فصحا و بلغاء عرب و عجم الخ

(R. S. Lib.)

53.

فرایض نامه منظوم

A versified treatise on the law of inheritance, by Sīrājī (?). Composed A.H. 725 = A.D. 1324. Dated A.H. 774 = A.D. 1372 as stated at the end :—

دو شنبه آخر شهر مبارک   بآخر آمد این نظم مبارک
پس هفصد گذشته خمس عشرین   خدایا رحم کن بر جمله آمین
فرایض شد نوشته در محرم   قیاساً سه ز مه یا خود چهارم
بهفتاد و چهار آور تو هفصد   ز هجرت رفته این ای مرد بخرد
ترا این از سراجي یادگار است   دعایش را بخیر امیدوار است
که ناظم را و کاتب را الهي   بیامرزی بفضل پادشاهي

Written in S͟hikastah-Āmīz Ta‘līq.

Beg. : پس از تحمید ذات پاک یزدان   درود مصطفی و نعت یاران

(R. S. Lib.)

54.

قوة الاسلام

A treatise on Muhammadan law by Md. Latīf B. Md. ‘Alī B. Md. S͟hāh of Bahrāich in Gujrat. Composed in A.H 1120 = A.D. 1708. It is divided into 20 chapters.

Incomplete; wanting 10 chapters. Written in Tā'līq. Not dated.

Beg. :— الحمد لله رب العالمين که علم آدم الاسماء کلها آيتي از آيات الخ

(R. S. Lib.)

VIII.

HISTORY.

55.

A general history beginning from pre-Islamic times without any title and carried down to the year A.H. 970 = A.D. 1562.

The name of the author Ghiyāth al-Dīn Muhammad Jāmī appears on fol. 1. In the preface he says that he was in the service of the Emperor Humāyūn[1] till the year A.H. 950 = A.D. 1543 and undertook to write the history after his demise which occurred some time after A.H. 964 = A.D. 1556, as appears from the following quotation :—

عرضه ميدارد بجرع جام تلخ کامي غياث الدين محمد الجامي خصّه الله
بفضله السّامي - توفيق رفيق ابن بنده گشته بود که مدتی مدید ملازم مجلس
نامی و موقف گرامي همايون حضرت و شاه ربع مسکون بود و ذره وار پرتو
آفتاب فايض الانوار آنحضرت جولان مي نمود - اعني عاليحضرت خلافت
مرتبت ... وارث تخت بادشاه سعيد شاه سلطان ابوسعيد شهر يار ...... رافع
رايات المجاهدات و المغازي مزين سرير الخلافت محمد همايون بادشاه
الغازي سقاه الله صوب رضوانه و کساه ثوب غفرانه الخ -

The history commences with a short account of the prophets, kings and philosophers of pre-Islamic times. Then follows the history of the Islamic period in which the author gives laconic descriptions of the Prophet, his successors and the Imāms; and a tabular account of the renowned personages, Sayyids, learned men, nobles, ministers and celebrated Persian poets who flourished from the 1st year of the Hijrah to the year A.H. 970 = A.D. 1562, as appears from following passage :—

مخفي نماند که ابن مختصر مشتمل است بر احوال انبياء عظام و حکما
و سلاطين که نافذ فرمان بودند پيش از ظهور اسلام و ذکر شمه از سيرت حضرت

---

[1] **Humāyūn (A.H. 937-963 = A.D. 1530-1555) had a great literary taste and was very fond of books and MSS., inasmuch that he carried a select library with him even during expeditions. See Noer's *Akbar*, p. 136 (translated by Annette S. Beveridge). An autograph note of Humāyūn will be found on the margin of a copy of *Dīwān-i-Hāfiz* belonging to the *O.P. Lib.* See Cat. Vol. I, No. 151.**

سید المرسلین و خلفاء راشدین و ایمهٔ معصومین و بعد ازان از سال هجرة
ابتدا نمودة تا محرم سنه ۹۷۰ سبعین و تسعمائة سال بسال احوال مشاهیر
صحابه و اعاظم و سادات و علما و امراء و وزراء و مشاهیر شعراء مرتب ساخت.

The narrative breaks off at the description of Ibn Ḥusayn Mirzā who died in A.H. 919 = A.D. 1513.

The author has made use of a great number of books in the compilation of his work. The following are among them :—

تاریخ طبري - حبیب السیر - سلسلة الذهب - کشف الغمه - نجم الزاهرة -
تاریخ یافعي - جامع الاصول - ابن خلکان - مقصد الاقصی - روضة الاحباب -
معارف - نظام التواریخ تحفة الملکونیة - ذخیره الملوک - روضة الصفا - تاریخ
گزیده وغیرة وعیرة -

The MS. was transcribed in the year A.H. 919 = A.D. 1513 when the author was alive :—

قوبل وصحح بقدر الوسع و الامکان سنه ۹۱۹ هجري [۱۵۱۳ ع]

From the following note on the fly-leaf it appears that this MS. was in the possession of one Luṭf-Allah in the year A.H. 996 = A.D. 1587 who gave it to his son Shah Ḥusayn for preservation as a legacy :—

صاحبه و مالکه لطف اللّٰه بن اسد اللّٰه الحسیني عفي عنهما - تحریرا
في شهور سنه ۹۹۶ هجري (۱۵۸۷ ع) - و هبت هذا الکتاب للولد الاعز
الارشد شاه حسین

طوله اللّٰه عمره في اکتساب السعادة -

From 1-206 folls. written in neat Ta'līq and the rest in usual Ta'līq. Headings are in rubric.

Beg. :— شکر و سپاس و حمد بیقیاس کرمی را که از عبودیت الخ

(Dīwān Faḍl-i-Rabbī Lib., Murshidabad.)

56.

احسن السیر

A rare copy of a history of the prophets, Caliphs and the Imāms by Md., surnamed Kāẓim, composed in A.H. 1114 = A.D. 1702. The author seems to be identical with the author of the *Farḥ-i-Nāmah-i-Fāṭimī* mentioned in *Br. Mus. Pers. Cat.*, p. 708*a*, where he gives his name as Ḥāẓiq and refers to the present work as one of his compositions.

Written in a fair Ta'līq. Not dated, but apparently 13th century of the Hijrah. There is another copy of the same work. Headings are in red.

Beg. :— عنوان صحیفهٔ لطایف اخبار انبیاء عظام الخ

(Imperial Lib.)

57.

اخبار الجمال

A biographical work by Yār Md. B. Rājī Kamman, born in A.H. 1098 = A.D. 1686 in the reign of Aurangzīb (A.H. 1069–1119 = A.D. 1659–107). It contains short notices of prophets and saints. Most of the latter were inhabitants of Kol (Aligarh), among whom was the author's spiritual guide. It was composed in the time of the Emperor Md. Shāh (A.H. 1131–1151 = A.D. 1718-1738). See fol. 7^{b} of the MS., and for an account of the author's life see MS. folls. 247^{b} to 249^{b}.

From folls. 1-53 and from 71–368, i.e. the last fol., the pasted parts are not readable.

The MS. is defective at the end. Written in usual Ta'līq. Headings are in rubric

Beg. :—الحمد لله رب العالمين و الصلوة ... اما بعد ... بار محمد
بن راجي كمّن

(Cambridge Mission Lib., Delhi.)

(Bought for the Government Coll. in the A.S.B. in 1917.)

58.

بهجة المباهج

A valuable and old copy of a history of the Prophet, 'Alī and their descendants, by Abū Md. Ḥusayn B. Abū 'Alī B. Hasan Sabzwārī. For author see *Amal al-Āmil*, p. 37, and *Br. Mus. Pers. Cat.*, p. 758.[1] Written in good Ta'līq, within coloured ruled borders with an illuminated 'Unwān. Not dated, apparently 16th century.

Scribe :—Ḥāfiẓ Md. Bāqir al-Sharīf.

Beg. :— حمد بیحد و ثنای بیعد الخ

(Imperial Lib.)

---

[1] For another copy see *Catalogue of the Oriental MSS. in the Lib. of King's College, Cambridge*, published in the *J.R.A.S.*, Vol. III, New Series, p. 110, No. 58.

59.

تاریخ سلیماني

This work contains the story of the prophet Solomon and his wife Bilqīs, and a short narrative of the prophet David, by an anonymous author. ‘Unwān illuminated, written in Ta‘līq, within gold-ruled borders. The MS. contains 18 Indian miniatures. Dated A.H. 1260 = A.D. 1844.

Beg. :— حمد بیحد و ثنای بیعد نثار بارگاه بادشاه حقیقي - الخ

(R. S. Lib.)

60.

تاریخ شاهیه نیشاپوریه

A rare and valuable history of the kings of Oudh from Nawwab Sa‘ādat ‘Alī Khān (A.H. 1212–1229 = A.D. 1797–1813) to Md. ‘Alī Shāh’s accession in A.H. 1254 = A.D. 1838 :—

مختصری از حالات دودمان از وقت ورود نواب سعادت خان مرحوم در هندوستان و تفویض صوبهٔ اوده بنام نامي ایشان و بعد ازان بنواب صفدر جنگ بهادر مرحوم الی عهدنا هذا که سنه یکهزار و دو صد و پنجاه و چهار هجري مطابق یکهزار و هشت صد و سي و هشت عیسوست -

The author describes those contemporary events to most of which he was an eye-witness, and which were omitted by the author of the Imād al-Sa‘ādat, a history of the Oudh dynasty, brought down to A.H. 1216 = A.D. 1801 :—

جمیع واقعات و سوانح این دودمان عالیشان از چهار پشت پیش نظر احقر العباد وقوع یافته و صاحب کتاب عماد السعادت که بنام نامي جنت آرامگاه موصوف نوشته تا عهد دولت آن جناب مرقوم ساخته بلکه برخی از سوانح آن ایام نیز ازان کس نا تمام باقي مانده - الخ

Contents :—

(۱) ذکر نسب نواب برهان الملک سعادت خان -

(۲) ذکر ورود میمنت آمود نواب سعادت خان در هندوستان و آغاز ترقي درینجا

(۳) ذکر آبای کرام مرزا مقیم نواب صفدر جنگ منصور علي خان مرحوم

(۴) ذکر مسند آرائي نواب صفدر جنگ بمقام نواب برهان الملک

(۵) ذکر نسب و حسب موتمن الدوله محمد اسحق خان شوستري
که با صفدر جنگ وصلت کرده

(۶) ذکر جنگ نولرای با احمد خان بنگش و کشته شدن رای مذکور
باعث تکبر و بعد از کشته شدن رای مذکور آمدن نواب صفدر
جنگ برای انتظام نولرای و شکست خورده رفتن بشاهجهان آباد

(۷) مسند آرای نواب وزیر الممالک شجاع الدوله بهادر و شورش مغلیه
باشاره اسمعیل خان کابلي و طلبیدن او محمد قلي خان را برای
ریاست بمشوره سرداران مغلیه

(۸) حرکت فوج نواب بفرخ آباد و بیرون آمدن احمد خان بنگش
از شهر مذکور

(۹) آمدن خط حافظ الملک حافظ رحمت خان اسمي مظفر جنگ
پسر احمد خان بنگش و کشته شدن حافظ الملک از کردار خود

(۱۰) ذکر وساده سرای نواب آصف الدوله بعد از پدر خود

(۱۱) کشته شدن مختار الدوله و تشریف بردن نواب یمین الدوله
باکبر آباد

(۱۲) ذکر نهضت الویه ظفر نواب آصف الدوله در بنارس برای ملاقات
گورنر جنرل در سنه هزار و صد و نود و پنج هجري

(۱۳) ذکر مسند نشیني وزیر علي خان که همگي چهار ماه و چند
روزه بوده

(۱۴) ذکر نواب سعادت علي خان و مسند آرائي آن جناب بر ریاست
وزارت

(۱۵) ذکر کشته شدن بیگناه مسٹر چیري از دست وزیر علي خان
باعتماد دوستي خود

(۱۶) ذکر ورود نواب گورنر جنرل مارکویس ویلزلي صاحب بکانپور
و ملاقات جناب عالي بان امیر عالیشان

(۱۷) و ساده نشین غازي الدین حیدر بر مسند وزارت بسعي عماد الدوله
مسٹر جان بیلي

(۱۸) مسند آرای نصیر الدین حیدر باعانت رزیڈنٹ

Written in usual Ta'lîq, except the last folio. No date.

Beg. :— نیکو ترین سخنی که قافله سالار کلمه و کلام و مهترین
کلامیکه رئیس مضامین علوم

(R. S. Lib.)

61.

تاريخ در حالات سفر محمد بادشاه

An interesting MS. containing an account of a journey undertaken by the Emperor Md. S͟hāh to a place called Muktesar (مكتيسر). The journey commenced on the 23rd of Muḥarram, and ended in Jumādā I, A.H. 1150 = A.D. 1737, and it was undertaken with the object of shooting and hunting as well as to punish one ʻAlī Muḥammad Rohilla :—

بست و سيوم محرم الحرام سال يكهزار و يكصد و پنجاه و هشتم هجري .. ... محمد شاه بادشاه غازي ... بسعد الدين خان بهادر خانسامان و هادي بار خان مشرف فراش خانه حكم والا شرف صدور يافت كه پيش خانهٔ همايون را از درياى جمن گذرانده متصل فرحت افزا كه باغيست در نواح قصبه لوني آراستگي دهند و فرداي آن بست و چهارم ... كه آفتاب از مشرق طلوع كند بسواري تخت روان مطلا از قلعه دار الخلافت شاهجهان آباد بيرون خراميده بارادهٔ سير و شكار گده مكتيسر كه در ضمن آن گوشمال علي محمد روهيله الخ

The date of the journey is indicated by the following verse, which is a chronogram : see fol. 27 —

رقم تـــاريخ كرد از روى زاري   كه عمـــر اين سفر كوتاه بادا

Author :—Anand Rām *Mukhliṣ* (d. A.H. 1164 = A.D. 1750). For author and his other works see *Br. Mus. Pers. Cat.*, p. 997^a, and for Nawwāb Md. K͟hān, consult Mr. Beale's *O.B.D.*, p. 58. Written in S͟hikastah within gold-ruled borders. ʻUnwān illuminated. All headings are in red. Dated A.H. 1158 = A.D. 1745. Autograph copy :—

لله الحمد و المنة امروز كه دوازدهم رمضان المبارك سنه يكهزار و يكصد و پنجاه و هشتم هجري و بست و هشتم جلوس محمد شاهي است و روز يكشنبه اين اجزاى چند كه متضمن احوال سفر بن گدّه است چهار گهڙي شب گذشته در ايام آمد آمد. زمستان بخط فقير انندرام مخلص باتمام رسيد -

The work contains two miniatures of good style, to be found on foll. 32*a* and 39*a*.

Beg. :—بست و سيوم محرم الحرام سال يكهزر و يكصد و پنجا و هشتم هجري - الخ

(R. S. Lib.)

62.

تاریخ موسوی

A detailed history of the prophet Moses, by Mu'īn al-Dīn Md. Amīn al-Farāhī (d. A.H. 907 = A.D. 1501). He is the author of many works, e.g. *Ma'ārij al-Nubūwat*, *Rawḍat al-Wā'iẓīn* معارج النبوة - روضة الواعظین etc. For details see *Ind. Office Lib. Cat.* No. 605. Two copies of the work are in the *A.S.B. Lib Vide Pers. Cat.*, p. 23, No. D. 75. Written in ordinary Ta'līq, without date, apparently 13th century.

Beg. :— ربنا آتنا من لدنک رحمة الخ

(Imperial Lib.)

63.

تذکرة المعصومین

A history of the Prophet, the twelve Imāms and the fourteen martyrs of Karbalā, by Md. Nādir. Probably this work was composed after the 11th century of the Hijrah. The date of transcription given in the colophon is without year (3rd Ramaḍān, Tuesday). Written in fair Nasta'līq, apparently 12th century of the Hijrah.

Beg. :— حمد و ثنای فراوان و ستایش و نیایش بی پایان الخ

(Imperial Lib.)

64.

ترجمة الاسرار

A history of Muhammad and the early Caliphs with an account of the Caliphate of Imām Hasan and Mu'āviyah, by Kamāl-Allāh Md Pīr Ṣiddīqī, composed in A.H. 1185 = A.D. 1771. The work is divided into 25 sections (فصل). Written in usual Ta'līq. Not dated, apparently 19th century.

Beg. :— الحمد لله رب العالمین و العاقبة للمتقین الخ

(Imperial Lib.)

This volume contains the two following historical works :—

65.

تاریخ فرخ آباد

History of Farrukhābād. See for details *Br. Mus. Pers. Cat.*, p. 959*b*. Written in fine Ta'līq.

66.

حالات عباس خان

Autobiography of Md. ‘Abbās Khān Afghānī B. Md. Ziyārat-Allāh, poetically called ‘*Abbas*, who died in A.H. 1188 = A.D. 1774. Vide *Akhbār al-Sanādīd* for Abbās Khān (where extracts from the autobiography are also given), part 1, pp. 373-75. Written in clear Ta‘līq.

Beg. :—حمد بیحد و ثنای بیعد مر خالقی را که بیک لفظ کن وجود کونین را الخ

(Ḥāfiẓ Ahmad ‘Alī Khān Lib., Rampore.)

67.

روضة الاصحاب

A history of the early Caliphs chiefly treating of their merits, qualities and distinctions, by Waḥīd al-Din Md. better known as Mīr Khān, composed in A.H. 944 = A.D. 1537 Written in careless Ta‘līq, apparently 18th century.

Beg. :— حمد و ثنا از دل و جان جاري برزبان الخ

(Imperial Lib.)

68.

سوانحات ممتاز

A detailed history of the reign of Nawwāb *’Umdat al-’Umarā*,’ who ruled the Carnatic from the beginning of A.H. 1210 = A.D. 1795 to A.H. 1216 = A.D 1801, with an account of the last year of the reign of his father, Muhammad ‘Alī Khān, the son of Anwar al-Dīn. It also contains a summary of the events under *’Umdat al-’Umarā’s* successors, his nephew ‘Aẓīm al-Dawlah and ‘Aẓīm’s son ‘Aẓīm Jāh (who succeeded his father in A.H 1235 = A.D. 1820) and a full geneology of the family.

Author :—Ghulām Ḍāmin, who composed the work in A.H. 1235 = A.D. 1873.

For another copy and details see *Ind. Off. Lib. Cat.* No. 502. Written in fine Nasta‘līq. Dated A.H. 1281 = A.D 1864. = A.D. 1828.

Beg. :— حمداً متوافراً و شکراً متکاثرا بخدای عزو جل الخ

(Ahl-i-Islām Lib., Madras.)

69.

لوامع الانوار

A valuable copy of a history of the Prophet and the twelve Imāms, by Aḥmad B. Ḥusayn Zawwārī. It is an abridgment from the *Aḥsan al-Kibār* of Md. B. Abī Zayd B. ʻArabs͟hāh al-Ḥusaynī, and was written by order of S͟hāh Ṭahmāsp Ṣafavī, A.H. 930-984 = A.D. 1523-1579.

Md. Bāqir K͟hwānsārī, the author of *Rawḍāt al-Jannāt*, says in p. 407 :—

وهو كتاب متداول كبير عندنا منه نسخة . وقد لخصّه من كتاب احسن الكبار في مناقب الائمة الاطهار لبعض علمائنا ناصر السلطان شاه طهماسپ الصفوي و زاد عليه بعض المطالب و الفوائد وجعله مرتّباً على مقدمة في اصول الدين و اربعة عشر بابا في احوال السادات الطاهرين

Written in Nastaʻlīq within coloured ruled borders. The headings are written in red throughout. Dated A.H. 1244 = A.D. 1828.

Beg. :—حمد خالقی که مسبحان ملاء اعلی بل مقرب قاب قوسین - الخ

(Imperial Lib.)

70.

مجمع الملوک

This historical work is the third Daftar of the *Baḥr-i-Zak͟hk͟hār*, a historical encyclopædia. See Elliott. *History of India*, Vol. VIII, p. 433, and *Br. Mus. Pers. Cat.*, p. 915^a.

Author :—Md. Riḍā poetically called ‘*Najm*’ who succeeded his father as the chief minister of the Delhi Court in A.H. 1227 = A.D. 1812. From a note on the fly-leaf it appears that it is an autograph copy :—

كتاب تاريخ مجمع الملوک تاليف نحيف محمد رضا بن ابوالقاسم عفي الله عن جرائمها

The marginal corrections are by the author. Written in good Taʻlīq.

(M. ʻAlī Ḥusayn Lib., Hyderabad.)

71.

مرآة الاحوال جهان نما

Memoirs of the author's forefathers, and of his life and travels.

Author:—Aḥmad B. Md. 'Alī B Md. Bāqir of Isfahān, composed in A.H. 1224 = A.D 1809. For details see *Br. Mus. Pers. Cat.*, p. 385.

Written in minute Ta'līq. Not dated

Beg.:— الحمد لله الذي جعل العلماء ورثة الانبياء و فقه ل مدارهم الخ

(Syed Zayn al-'Ābidīn Lib., Murshidabad.)

72.

مقاصد الاوليا في محاسن الانبيا

A valuable history of saints and prophets by Maḥmūd B. Aḥmad B. Ḥasan Fāryābī (d. A.H. 607 = A D. 1210). For author see *Berl. Lib. Ar Cat.* No. 8771. The name of the author and the work are incidentally mentioned in the *Br. Mus. Pers. Cat.*, Vol. III, p. 1030^{a}. Written in clear Ta'līq, within coloured ruled borders. No date, apparently 17th century.

Beg.:— سپاس و ستایش مر خداوندرا که باقوت الخ

(Imperial Lib.)

IX.

BIOGRAPHY.

73.

انيس العاشقين

An excellent and valuable collection of biographies of ancient and modern poets and poetesses, by Rājah Ratan Singh Bahādur, poetically called "*Zakhmī*" (d. A.H. 1267 = A.D. 1851). He was an inhabitant of Lucknow and was the financial minister of the Nawwābs; but his property and family were at Bareilly.[1] His titles were Munshī al-Mulūk Fakhr al-Dawlah *Dabīr al-Mulūk* Rājah Ratan Singh Bahādur Hushyārjang. For his life and other works see *Sprenger Cat.*, p. 591, *Br. Mus. Pers. Cat.*, Vol. III, pp. 962*a* and 1096*b* and Beale's *O.B.D.*, p. 426.

This is the 2nd Vol. of the work.[2] It contains about 1,176 notices arranged in alphabetical order, and begins with T.ā.(ط).

---

[1] He left a big library, in which there were many printed books and about 2,000 MSS. (see *Br Mus. Pers. Cat.*, p 962^{a}). Many MSS. originally belonging to his library have been purchased by the Government of India for the *A.S.B*

[2] I saw the 1st Vol. of this work in the possession of Mātā Pershad, a book-seller, Nawāzgange, Lucknow.

Written in fine Ta'līq. Illuminated 'Unwān. Dated A.H. 1239 = A.D. 1820.

Scribe :—Ghulām Ḥusavn.

Beg. :—[طالب] از کتخدا زادگان جاجرمیه و از شاگردان شیخ آذري الخ

(Gorī Pershad, Mashakgange, Lucknow.)

74.

تاریخ قادریه

Short lives of the holy men, who form the filiation of the Qādirī order, from the Prophet to the author's spiritual guide, by Muḥammad 'Abd al-Rashīd Qādirī al-Kayrāvānī. Composed A.H. 1150 = A.D. 1737. For author and his other work see *Br. Mus. Pers. Cat.*, p. 361^{b}. Written in Shikastah-Āmīz Ta'līq. Dated A H. 1193 = A.D. 1779.

Scribe :—Md. Muṣṭafā Qādirī.

Beg. :—الحمد لله الذي جعل قلوب العارفين منورا بنور العرفان ... بعضی مریدان و معتقدان الخ

(R. S. Lib.)

75.

تحفة السعداء

Short lives of Shaykh Sa'd (d. A.H. 988 = A.D. 1580) Qiwām-al-Dīn (d. A.H. 840 = A.D. 1436) and Shāh Mīnā (d. A.H. 870 = A.D. 1465) of the Chishtiyah order, by Khwājah Kamāl. Composed at the request of his son in A.H. 1016 = A.D. 1607 :—

در تاریخ سنه الف و ستة عشر ... فرزند شاه حمید ابو الفیض ازین فقیر ... لا جرم بقدر طاقت در تحریر و تقریر کوشش نموده - و سمیته بتحفة السعداء

Scribe :—Gharbīdās. Written in Ta'līq. Dated A.H. 1175 = A.D. 1761.

Vide *Khazīnat al-Aṣfiyā* for Qīwām al-Dīn and Shāh Mīna, pp. 378 and 389, and *Distr. Gaz.* of Lucknow, Vol. XXXVII, p. 214.

Beg. :—الحمد لولیه و الصلوة علی نبیه ... عارفان حاجي الحرمین بندگي شیخ قوام الدین عباسي لکهنوي الخ

(R. S. Lib.)

76.

تحفة السعدية

Life and sayings of S͟hayk͟h Md., known as S͟hāh Mīnā (a famous saint of Lucknow), (d. A.H. 884 = A.D. 1479). Author:—Muḥyī al-Dīn B. Ḥusayn al-Raḍavī. Written in bad Ta'līq.

Beg. :—سپاس بیقیاس مر صانعی را که مقالات صاحبدلان سبب هدایت ساخته

(R. S. Lib.)

77.

تحفة الشعراء

Biographies of the Persian poets of the Deccan who flourished in the time of Āṣafjāh I (آصف جاه اول) *Niẓām al-Mulk* Mīr Qamar al-Dīn K͟hān (نظام الملک میر قمر الدین خان) who died in A.H. 1161 = A.D. 1747 at Burhānpore). See *Natā'ij al-Afkār*, p 47, and *Khīzānah-i-Āmirah*, p. 35.

Author:—Afḍal K͟hān of Aurangābād. Composed A.H. 1165 = A.D. 1751.

Written in Nasta līq in the year A.H. 1185 = A.D. 1771 for Āṣafjāh II (آصف جاه ثاني) Mīr Niẓām 'A'ı K͟hān (d. A.H. 1218 = A.D. 1803).

Beg. :— ای ذکر تو گلفروش بازار سخن الخ

(Niẓām Lib., Hyderabad.)

78.

تحفة الفقير الحقير

Short biographical notices of the companions of the Prophet who narrated the Ḥadīt͟h :—(1) (عشرہ مبشرہ) ten companions, (2) traditionists who are known by surnames, arranged alphabetically, (3) traditionists who are known by their Kunyas, (4) wives and daughters of the Prophet.

The author composed this work by the order of Mīr 'Alī S͟hīr Nawā'ī[1], the enlightened minister of Sulṭān Ḥu. of Persia (d. A.H. 906 = A.D. 1500) as mentioned on fol. 2 :—

ارباب العلم و الحکم امیرنظام الدولة و الدین علی شیر خلد الله ایام معدلته این سخن مذکور شد اشارت فرمودند که اگر این معني از قوة بفعل

---

[1] For 'Alī S͟hīr *Nawā'ī's* life see *Habīb al-Siyar*, Bombay edition Vol. III, Juz 3, pp. 217, 231, and 243, *Oueeby*, Notices, p. 50, and Elliott, *History of India*, Vol. IV, p. 527.

آید و بر مذقبت عرض جلوة نماید اولی و انسب باشد - بنابر اتباع امر عالي آنجناب این مختصر در اسامي صحابهٔ کتب مذکور بقلم آمد ... و این رساله را بتحفة الفقیر الی حضرت ...... الکبیر موسوم ساخت (۱) در ذکر عشرة مبشرة (۲) اسامي بعضی از صحابه [رض] که مشهورند باسم علی ترتیب الحروف ابيّ ابن کعب کنیت او ابو المندر بضم المیم وسکون النون و کسر المعجمة آخرة راء (۳) ذکر بعضی صحابه که بکنیت و لقب مشهور اند الکنی ابو سعید بفتح الهمزة و کسر المهملة آخرة مهملة - الخ (۴) ذکر زوجات پیغمبر و بنات الحفرة و سایر صحابیات -

Chapter IV is divided into 3 *Faṣl* :—

Beg. of 1st *Faṣl* :—(۱) ذکر زوجات پیغمبر ص - ام المومنین عایشه الصدیقه بنت ابي بکر صدیق و امها

Beg. of 2nd *Faṣl* :—(۲) ذکر صحابیات که باسم مشهور اند بترتیب اسماء بنت بي بکر رض زوجه زبیر بن العوام در کتب سته از وی

Beg. of 3rd *Faṣl* :—(۳) بعضی از صحابیات که بکنیت مشهور اند ام ایوب الانصاریه بنت قیس بن سعد زوجه

Written in minute Ta'līq. Valuable copy. Fol. I is wanting. Fol. II is highly illuminated.

Beg. of preface :—ارباب العلم و الحکم امیر نظام الدولة و الدین علی شیر

(R. S. Lib.)

79.

تحفهٔ مرشدي

Another treatise on the same subject, by 'Abd-Allāh B. 'Abd-Allāh al-Ḥusaynī, called Murshid B. Aṣīl al-Ḥusaynī. Composed by the order of Mīr 'Alī Shīr '*Nawā'ī*' (of Harat[1]) :—

باشارت علیه جناب علي شیر ... در قلم آورد مشتمل بر اسامي صحابه رضي الله تعالی عنهم و عدد مرویات ایشان در کتب سته صحیح بخاري - مسلم - سنن ابي داؤد سجستاني سنن ترمذی و سنن ابي عبد الرحمن نسائي سنن ابي عبد الله بن ماجة القزویني -

---

[1] For a brief description of the city of Harat see *J.A.S.B.* 1834, Vol. III, p. 9, and Mu'jam, Vol. IV, p. 958.

The purport of the MS. is same, but is different in arrangement. Arranged alphabetically as he says :—

از براى سهولت طالب اسامي صحابه بترتيب حروف تهجي ثبت افتاده و در حرف ابتدا از عشرۂ مبشره نموده كه آن حرف اولى آن اسم واقع شده و بعد ازيشان كسى را كه مرويات او بيشتر بوده بيشتر ذكر كرده و بعضى را كه در عدد مرويات برابر اند بر ترتيب حروف ايراد شده و هركس كه بكنيت مشهور است در حرف مسطور گشته و اين رساله بتحفه مرشدي موسوم ساخته ـ

Written in very bad Ta'līq. Not dated.

Beg. of the Preface :— الحمد لله الموافق المعين و الصلوة الخ ـ

Beg. :— ابوبكر رض اولاد عشره مبشره است و اسم او عبد الله الخ

(R. S. Lib.)

80.

تذكرۂ شعراى قاينات

A short collection of biographies of the thirty Persian poets of Qā'ināt or Barjand. Arranged in alphabetical order.

Qā'ināt is a village in Persia situated between Mas͟hhad and Sīstān.

Author :—Ḍiyā' al-Dīn of Qā'ināt.

Written in fine Nas͟kh. Dated A.H. 1330 = A.D. 1911. Copied from the author's copy, who is still living.

Beg. :— بزرجمهر قايني اسمش قيم بن ابراهيم ابن منصور سلطان محمود غزنوي است الخ

(W. Ivanow's collection.)

81.

تذكرۂ كاتب

A very rare copy of the short biographical dictionary of Persian and Indian poets, arranged alphabetically.

Author :—Kātib Ṣafavī Muḥammad 'Alī. Composed in A.H. 1225 = A.D. 1810, according to the chronogram on the last page :—

شد تذكره از فضل قدير قيوم   گرديد بدهر نام كاتب موسوم
تاريخ تماميش بگفتا هاتف   كم كن توصد از تذكره گردد مفهوم

The author deals with those Persian poets who are not mentioned in the *Mak͟hzan al-G͟harā'ib* [مخزن الغرايب] of Aḥmad

'Alī Khān Hāshimī of Sandīlah, mentioned in *Bodl. Lib. Cat.* No. 395 and *Tuhfat al-Shu'arā'* [تحفة الشعراء] of Sulṭān Muḥammad Mirzā noticed in *Br. Mus. Persian Cat.*, p. 430ª. Composed by the order of the said Sulṭān Muḥammad Mīrzā, who adopted the poetical title of "*Ṭulū'ī*" (طلوعي), as stated in the prologue:—

چون اين ذرۀ خاكسار ...... در سركار خديو جم ... سلطان محمد صفوى
المتخلص طلوعي ...... درمصاحبت و شغل شريف كتابت بود حكم فرمودند
كه انچه از تذكرۀ مخزن الغرايب بقلم عنايت رقم جا بجا اشعار آبدار نشان
و نقطه گذاردة ام همگي را برنگارند بحروف تهجي تا دفعه ثاني جداگانه
و نظر ...... من بگذرد اگر اسامي سامي عظامي در تحفة الشعراء من بناشد
درج سازند - بحسب الامر حضور ...... شروع در جمع آوري آن نمود -

Written in beautiful Ta'līq. No date.

Beginning of the preface:—

شعلۀ كه نوالۀ اخگر او زمين و آسمان را فرو گرفته منور سازد

Beg. :—(الف) اشرف سمناني كه در قصبۀ كچهوچه من اعمال
صوبۀ اودة مدفون است الخ

End :—يقين از مردم ولايت است درلباس درويش سيردهلي ميكرد الخ

(R. S. Lib.)

82.

تذكرة النساء

Short biographies of the poetesses of India, without author's name. Written in Shikastah-Āmiz Ta'līq. Dated A.H. 1182 = A.D. 1768.

(Ḥajī Ḥabīb-Allāh Lib., Nillore.)

83.

تكملة الشعراء

An extensive biographical dictionary of Persian poets of ancient and modern times, composed during the time of Muḥammad Shāh (A.H. 1131–1161 = A.D. 1719–1748) as mentioned in the preface:—

...... از تذكرۀ شاعران زمان چه اهل فارس و اهل هندوستان خالي است
كه جامع تذكرۀ اسامي جميع شعراء متقدمين و متاخرين از ابتداء ايجاد شعر

فارسي تا عهد دور سلطنت محمد شاه ...... بر آورده درين مختصر جمع
ساختم ...... موسوم بتكملة الشعرا جام جمشيد است

The author compiled this work after his جام جهان نما (composed A.H. 1191-3 = A.D. 1777-9) :—

از تاليف جام جهان نما که مشتمل ...... فارغ شد بعضی آشنايان ......
که اين تاليف که جامع بذکر جميع هرفرقه و متاخرين و سابقين و لاحقين
نموده شد الخ -

The work is arranged in alphabetical order. For author and his other works see *Br. Mus. Persian Cat.*, p. 1024*b* and 1051*a*, and Elliott, *History of India*, Vol. VIII, p. 184.

Author :—Muḥammad Qudrat-Allāh of Gūpāmū in Oudh. Transcribed by Ḥāfiẓ Ghulām Muḥyī al-Dīn B. Jān Md. for Muẓaffar ‘Alī Khān Bahādur. Written in fine Ta‘līq. Dated A.H. 1218 = A.D. 1803.

Beginning of the preface :—کهن شد قصۀ مجنون حديث
نو ز من بشنو

Beg. :— - حمد وافر و ثنای متکاثر...... ابا يزيد بسطامي رح الخ

End :— يحيی سمرقندي ...... الخ

There is another copy in this library written in Shikastah hand.

(R. S. Lib.).

84.

ثمرات القدس

Biographies of some saints and pious women, most of whom belong to the Chishtiyah order, by La‘l Beg. Written in Ta’līq. It is divided in four sections گروه. Incomplete at the end.

Beg. :— حمد بی انتها و منت بی منتها حکيمی را وسد - الخ

(R. S. Lib.).

85.

روضات شاهي مسمّی کتاب الدين المبين

A work on the science of tradition illustrated with biograpies of some eminent traditionists, by Md. Ja‘far B. Sayyid

Jalāl B. Maqṣūd 'Ālam Shāhī, poetically called "*Jalālī*" (d. A.H. 1085 = A.D. 1674). Composed in A.H. 1077 = A.D. 1666. The following subscription suggests that the copy is an autograph of the author :—

فرغ من كتابته مولفه اقل العبيد الالٰهية كليب العتبة العلية الشاهية
خويدم الحديث المصطفوي مملوک اهل البيت النبوى محمد جعفر ابن سيد
جلال الدين محمد مقصود عالم الشاهي الرضوي كان اللّٰه تعالى لهما و لمن
احبهما و اجلهما - و هٰذا الكتاب من الكتب الاربعة و العشرين من الروضات
الشاهية المسمّى بكتاب الدين المبين المتين في شرح اصول الحديث و بيان
احوال المشاهير من المحدثين و يتلوه فى السفر الثاني بالكتاب الثاني و هو
المسمى بكتاب المعجزات و الآيات البينات -

و كان الفراغ من كتابة هذا السفر ضحوة يوم الاحد السادس و العشرين
من ذى الحجة من سنة ١٠٧٧ هجري و آخر دعوانا ان الحمد للّٰه رب
العالمين و الصلوة و السلام و البركة و الترحم و التحنن على سيد العالمين
محمد و آله و اصحابه و ازواجه و احبابه لهما ولاولادهما كان لآبائهما
و اجدادهما آمين -

For author and his other works see *Taẓkirah-i-'Ulamā-i-Hind* (by Ramaḍān'Alī), p. 214. *Sprenger Cat.*, p. 445, and my *Pers. Note* (No. 135) for his *Rubā'iyāt*.

An autograph copy of the *Dīwān of Jalālī* is in the *A.S.B. Lib.* See *Pers. Cat*, p. 106. It was once in the possession of Tippū Sulṭān *Lib.*[1] (A.H. 1196–1213 = A.D. 1781–1798) as appears from a miniature seal on fol. 1*b*.

(M. 'Alī Ḥusayn Lib., Hyderabad.)

86.

سرو آزاد

An autograph copy of the biographical notices of the famous men of Bilgrām and other parts of India, by Ghulām 'Alī Āzād Bilgrāmī (d. A.H. 1200 = A.D. 1785). For details see *Sprenger Cat.*, p. 143, and *Ind. Off. Lib. Cat.* No. 683. Lith. at Āgra. Written in minute Shikastah-Āmīz Ta'līq.

(Ḥakīm 'Abd al-Ḥayy Lib., Amīnābad, Lucknow.)

---

[1] For Tippū Sultan Lib. see No. 270 foot-note and my Urdū article published in the *Aligarh Inst. Gazette*, 1917, May 16, and *History of Hyder and Tippū*, p. 313.

87.

سوانح شاه نعمت الله ولي

Biography of Shāh Ni‘mat-Allāh Walī, abridged from *Jāmi‘ Mufīdī* of Md. Mufīd Mustawfī B. Najm al-Dīn Maḥmūd Yazdī. See *Br. Mus. Pers. Cat.*, p. 2076.

Author :—Ṣan‘-Allāh *Ni‘mat-Allāhī* as stated in the MS. See fol. 9 :—

بر دانشوران کشور شعور مستور نماند که بسیاری از فضلای عالي نیار و مورخین بلاغت شعار خوارق عادات و واردات احوال و اربعینات و سیر و سلوک و حضر که در عرض یکصد و چهار سال که حضرت ولایت منقبت کاشف اسرار ازلي شاه نور الدین نعمت الله ولي در خواص و عوام این بلاد ظاهر گردیده در صفحات کتب مسطور گردانیده خصوصاً مولانا صنع الله نعمت اللهي بعبارت روشن رسالهٔ ترتیب داد الخ -

Written in Shikastah-Āmīz Ta‘līq. Dated A.H. 1281 = A.D. 1864. Scribe :—Md. Ṣādiq Kirmānī *Ni‘mat-Allāhī*.

Beg. :—بر ضمیر خورشید اقتباس هوشمندان سخن شناس در لباس الخ

(W. Ivanow's collection.)

88.

کلمات الشعرا

A very valuable copy of the notices of poets who flourished during the reigns of Jahāngīr, Shāhjahān and ‘Ālamgīr, by Muḥammad Afḍal ‘ *Sarkhush* ’ (d. A.H. 1126 = A.D. 1724). Composed in A.H. 1039 = A.D. 1681. See for details *Br. Mus. Pers. Cat.*, p. 369. The MS. was transcribed three years after the author's death by the order of Anand Rām ‘ *Mukhlis* ’ (A.H 1164 = A.D. 1750). The MS. contains many small miniatures of excellent style. ‘Unwān illuminated.

Written in perfect Ta‘līq. Dated A.H. 1129 = A.D. 1716. Scribe :—Md. Māh.

This copy was in the library[1] of the Emperor Muḥammad Shāh (A.H. 1131–1161 = A.D. 1719–1748). It bears his seal.

Beg. :— سخن جانست و دیگر گفتگو جانان ز من بشنو - الخ

(R. S. Lib.).

---

[1] During the reign of the Emperor Muḥammad Shāh, Nādir Shāh (A.H. 1148-1160 = A.D. 1735-1747) carried away with him the celebrated Imperial library of Delhi along with enormous treasure on his return to

89.

مآثر باقري

Short biographical notices of 53 eminent *savants* and poets of عراقين, خراسان, فارس, آذر بايجان, هند, روم, عرب, عجم, ترک and ديلم. Composed in A.H. 1245 = A.D. 1829 at the request of Md. Bāqir-al Mūsavī al-Ḥusaynī in the reign of Fatḥ Alī S̲h̲āh Qāc̲h̲ār فتحعلي شاه قاجار (1212–1250 = A.D. 1797–1831). The date of composition is expressed by the following chronogram at the end :—

منشي كلک وفا زد بهر تاريخش رقم   اين همايون جايگه جاويد وعشرتگاه باد

Author :—Muḥammad ʻĀlī B. Md. Ṭabāṭabā'ī. Written in small Persian Taʻlīq. Dated A.H. 1247 = A.D. 1831.

Scribe :—Md. ʻAlī Bazzāz Iṣfahānī.

Beg. :— منت خدايرا جلت كلمته كه گوهر بشري را - الخ

(R. S. Lib.).

·90.

مجالس العشاق

Lives of the great mystics and of some celebrated lovers, by Sulṭān Ḥusayn B. Sulṭān Manṣūr Baiqra (d. A.H. 911 = A.D. 1505). For details see *Br. Mus. Pers. Cat.*, p. 351*b*. The MS. is noteworthy for its fine and beautiful illuminations. It also contains 52 beautiful miniatures of the Persian style. This valuable copy once belonged to the library of the celebrated ʻAbd al-Raḥīm K̲h̲ānk̲h̲ānān in A.H. 999 = A.D. 1590 as would appear from the following note on the fly-leaf at the beginning :—

الله اكبر - در تاريخ روز جمعه غرة شهر ذى الحجة الحرام سنه ۹۹۹ هجري
[۱۵۹۰م] داخل كتاب خانهٔ عالي نواب كامگار گردون اقتدار سپه سالار خان
خانان بن نواب رضوان جايگاه محمد بيرم خان خانان شد در مقام بكر -

---

Persia. This Imperial library has been preserved by tho Mug̲h̲al Emperors as their most precious possession (see Martin's *Miniature Painting and Painters of India, Persia and Turkey*, Vol. I., pp. 58, 77. (Nūr al-Dīn was librarian (savant) of Md. S̲h̲āh's library).

After Nadir S̲h̲āh's plunder books and MSS. continued to be collected by the royal family, in as much that a decent library was formed. From this collection G̲h̲olām Qādir, the Rohela Chief carried away 8 baskets of books and MSS. in the reign of S̲h̲āh ʻĀlam II (A.H. 1173-1221 = A.D. 1806). (See *ʻIbrat Nāmah*, by Faqīr K̲h̲ayr al-Dīn Md., and Elliott, *History of India*, VIII, p. 249.

It was subsequently transferred to the library of Badr al-Dawlah *Shuja' al-Mulk* Muḥammad Sa'ādatmand Khān Bahādūr Asad Jang, the grandson of *Shams al-Dawlah* Ghaẓanfar Jang,[1] in A.H. 1263 = A.D. 1846, as appears from the following note on the fly-leaf of the MS :—

Beg. :— بتاريخ دوازدهم ذى الحجة سنه ١٢٦٣ هجري مقدسه روز جمعه نسخه مجالس العشاق دکتب خانهٔ نیازمند درگاه بدر الدوله شجاع الملک محمد سعادت مند خان بهادر اسد جنگ ابن نواب امین الدوله محمد خردمند خان بهادر بدرجنگ خلف الرشید نواب شمس الدوله محمد خدا بنده خان بهادر غضنفر جنگ والی ملک فرخ آباد داخل گردید

(R. S. Lib.).

91.

مجمع الکرامت

Life of Shāh Dargāhī Naqshbandī of Rāmpore, by Imām-al-Dīn Khān B. Ghulām Ḥusayn Khān B. Ghulām Gīlānī Khān. The author was in the Court of *Amīr al-Dawlah* Md. Amīr Khān Bahādur, Nawwāb of Tūnk. It is divided into 4 chapters.

Written in bad T'alīq Dated A.H. 1236 = A.D. 1820.

Beg. :— کرامتهای فیاضي را که بخشش هر یک بدرگاه والاش الخ

(Ḥāfiẓ Aḥmad 'Alī Khān Lib., Rampore).

92

مرأة مداریه

Life of Shāh Madār[2] whose original name was Badī' al-Dīn. He was one of the most popular saints of India, and died in A.H. 840 = A.D. 1436. The author of the work is 'Abd al-Raḥmān Chishtī (d. A.H. 1094 = A.D. 1682). See *Br Mus. Pers. Cat.*, p. 361^b, *India Off. Lib. Cat.*, p. 333, *O. P. Lib Cat.* (Bankipore), and *A.S.B. Lib. Cat.*, p. 40. The title of the work is given in the last catalogue as *Mir'at-i-Badī'ī*.

Scribe :—Hasīb al-Dīn Aḥmad (Head Maulavī Madrasah-i-Jalālīyah)[3]. For Ḥasīb al-Dīn see *Rawā'iḥ al-Musṭafā*, p. 4.

---

[1] Ghadanfar Jang known as Nawwāb Muḥammad Khān Bangash who founded the city of Farrukhābād in the name of his patron the Emperor Farrukh Siyar (A.H. 1124-1131 = A.D. 1712-1718). Ghadanfar Jang died in his native place, Farrukhābad, A.H. 1156 = A.D. 1743, at the age of nearly eighty years. See *Tārīkh-i-Muḥammadī* and *Br. Mus. Pers. Cat.*, pp. 986 and 960

[2] For Shāh Madār see *Aīn Akbārī* text, Vol. II, p. 219.

[3] For Madrasah-i-Jalālīyah see my *Notes*, Vol. XIII, 1917 (Lib. No. 25).

Written in fine Taʻlīq. Dated A.H. 1304 = A.D. 1886.

Beg. :— الحمد لله الذي خلق الاشياء وهو عينها الخ -

(Imperial Lib.).

93.

مرآة المذاهب فى كشف المناقب

A work on the merits of ʻAlī, the 4th Calīph, composed in A.H. 1050 = A.D. 1640 in Birār.

Author :—Sikandar.

The author attempts to prove the superiority of ʻAlī over the other three caliphs. It is divided into a مقدمه, *Muqaddamah* 4 مرآة *mir'at* and 4 رکن. *ruku.*

Scribe :—Mīr Ṣadr al-Dīn al-Ḥusaynī.

Written in Shikastah-Āmīz Taʻlīq. Dated A.H. 1111 = A.D. 1699.

Beg. :— شوق حمد مبرّا از مذاهب انتها الخ

(Wājid Ḥusayn, Lucknow.)

94.

منتخب الاشعار

A poetical anthology, with short biographical notices of poets, composed A.H. 1161 = A.D. 1748 (see the chronogram in the last verse :—پی سال تاریخ نظم معاني).
١١٦١

Author :—Mardān ʻAlī Khān B. Md. ʻAlī Khān Bahādur with the Takhalluṣ "*Mubtilā*" (مبتلا). The anthology is alphabetically arranged, and begins from fol. 2*b*.

The present copy was written in the time of the author as appears from the colophon :—

حسب الارشاد مولانا محمد وجيه اين منتخب الاشعار كه از مؤلفات
خان ذيشان مردانعليخان است سمت تحرير يافت - و كان ذلک في سلخ
محرم الحرام سنه ١١٦٦ هجري

For author's life see this work in *Mīm* (م) (مبتلا). For full details see *Bodl. Lib. Cat.* No. 379.

The author is wrongly called Md. ʻAlī Khān (the author's father's name) in *Bodl. Lib. Cat.* by Dr. Ethé.

Written in clear Nasta'līq.

Beg. :—منتخب دیباچهٔ حمدی که عندلیبان چمن خوش‌نوائی الخ

('Abd al-Ḥusayn, Lucknow.)

95.

مهمة المحدثین

A short biographical dictionary of the Ḥanafī traditionists, by Md. called Khawāṣ Khān al-Hanafī al-Qādirī al-Qarashī al-Madanī al-Bījāpūrī, who flourished in the time of Farrukh Siyar (A.H. 1124-1131 = A.D 1712-1718). The work contains besides the various traditions such as موضوع, غیر موضوع, احسن etc. of the Hanafī school, a detailed life of Imām Abū Ḥanīfah Nu'mān B. Thābit, one of the four juris-consults of Meccah, and founder of the first orthodox sect. He died in A.H. 150 = A.D. 767. The title of the work is a chronogram for the date of its composition (A.H. 1128 = A.D. 1715).

It is divided into a *Muqaddamah*, some *Muhimmah* and a *Khātimah*.

Beg. :—شیرین ترین حدیث متفق علیه که طوطیان شکرستان اخبار الخ

Written in elegant Naskh.

(Niẓām Lib., Hyderabad.)

96.

میخانه

A collection of *Sāqī Nāmahs* of ancient and modern Persian poets with their biographical accounts, by 'Abd al-Nabī B. Khalf Fakhr al-Zamān, composed in the time of the Emperor Jahāngīr (A.H. 1014-1037 = A.D. 1605-1628). The author says in fol. 5^b that he collected these *Sāqī Nāmahs* in five years and divided them in three *Martabahs* مرتبه as follows :—

(۱) مرتبهٔ اول در ذکر سخنورانی که داعی حق را لبیک اجابت گفته و سر در نقاب خاک تیره کشیده ۔

(۲) در ذکر شاعرانی که الحال در حیات اند و صحیفهٔ این ایام خجسته فرجام از منظومات ایشان مزین میکرد و درمیان این طایفه هر کدام سرشاری دارند و ساقی نامهٔ تمام عیاری گفته اند ۔ (۳) در ذکر فصحای که مولف کتاب با ایشان برخورد و با ایشان صحبت داشته و یقین حاصل کرده که تا غایت

ملاقات ساقي نامه نگفته اند و اشتهار تمام عياري دارند و اكثر ابيات ايشان برتبه واقع شده است مجملي احوال آنها با يک بيت و بيت كه مناسبتی باين كتاب داشته باشد مرقوم قلم شكسته رقم ميگردد در تمام اين مجموعه هرجا كه ذكر بادشاهان عظيم الشان و شاهزادگان جم نشان با وزرای تدبير و امرای بشمشير كرده مي شود - اسامي گرامي ايشان را از روی اعزاز و اكرام بر بياض مي برد -

After this he gives an index of the names of the poets from whom he has made the selections. An account of his life will be found on folls. 301^b to 310^b where he states that he dedicated the first and second *Mārtabahs* to Nawwāb Sardār Khān and the third *Martabah* to Himmat Khān (d. A.H. 1092 = A.D. 1681). He further states that he himself composed 2,528 verses and wrote two other works, viz. *Dastūr al-Fuḍalā* (دستور الفضلا) and *Nawādir al-Hikāyāt* (نوادر الحكايات) (composed in A.H. 1041 = A.D. 1631), which is in the *Br. Mus.* See *Catalogue*, p. 1004*b*. Shams al-'Ulamā Shiblī (d. A.H. 1333 = A.D. 1914) had a copy of the *Maykhānah* (ميخانه). See *Makātīb-Shiblī*, Vol. II, p. 73. The MS. was written in the author's lifetime and is dated A.H. 1039 = A.D. 1629. Written in minute Ta'līq. One fol. is wanting at the beginning.

Beg. :— …… ديدهٔ او در جربان است مولد آن الخ

(R. S. Lib.).

97.

نشتر عشق

A very extensive biographical dictionary of 1,470 Persian and Indian poets, arranged in alphabetical order, by Ḥusayn Qulī Khān of 'Aẓīmābād, poetically called '*Āshiqī*, composed in A.H. 1233 = A.D. 1817. The work was commenced in A.H. 1224 = A.D. 1809 and completed in A.H. 1233 = A.D. 1817. An index is given at the beginning. A copy of this work in two volumes is preserved in the *O.P. Lib.* (Bānkīpore), and *Sprenger* also mentions this work : see p. 644.

Scribe :—Makhdūm Bakhsh "*Murawwat.*"

Written in usual Ta'līq. Dated Buland Shahr, A.H. 1236 = A.D. 1820.

Beg. :— جميع محامد محمودی را كه نسخهٔ جامع موجودات را بقلم قدرت الخ -

(R. S Lib.).

98.

عجایب المخلوقات و غرایب الموجودات

NATURAL HISTORY.

A rare and valuable cosmographical work, composed in the beginning of the latter half of the sixth century of the Hijra. The author does not give his name anywhere in the work, but from a passage on fol. 7^b it appears that he wrote this work for Ṭughral B. Arsalān B. Ṭughral (A.H. 571-590 = A.D. 1175-1193).

The date given by the scribe, A.H. 125, is clearly an error: it should be A.H. 1025 (= A.D. 1616); the zero has apparently been omitted. The beginning of this copy does not tally with the copy noticed by *H. Kh.* entitled *'Ajā'ib āl-Makhlūqāt* by Md. B. Maḥmūd B. Aḥmad al-Ṭūsī al-Salmānī (d. A.H. 555 = A.D. 1160). See *H. Kh.*, Vol. IV, p. 188.

The MS. has 21 miniatures, written in fine Ta'līq, by Md. Qāsim, within gold and coloured ruled borders on gold-sprinkled papers with an illuminated frontispiece.

Mr. Beveridge has omitted to note this rare work in his notice of MSS. belonging to the Bohār Lib. See *J.R.A.S.* 1910 p. 82.

Beg. :— سپاس مر خداوندیرا که بمعرفت خود بینا گردانید - الخ

(Imperial Lib.).

XI.

99.

انتخاب بیاض شعرای اساتذه

POETRY.

Selections from the poems of the most distinguished and eminent poets of Persia, made by the celebrated poet Mīrzā Md. 'Alī, poetically called *Ṣā'ib* of Iṣfahān (d. A.H. 1088 = A.D. 1677). The verses numbering 16,914 are arranged in alphabetical order. A table of contents in the MS. contains the names of the poets from whom the selections are made. See *Makātīb-Shiblī*, Vol. II, p. 13.

Gold-ruled, written in two columns. The 'Unwān is richly illuminated. Written in elegant Ta'līq.

Scribe :—Zayn al-Dīn Bahbahānī, better known as *Majnūn* (مجنون), dated A.H. 1099 = A.D 1687.

(Niẓām Lib., Hyderabad.)

100.

منتخبات نظم

A very valuable collection of Persian poems selected from the works of eminent poets The first hemistich (**مصرعه**) of the opening line is illegible. Written in good Persian hand. Dated A.H. 1271 = A.D. 1858.

Beg. :— ………… هر كه شود مشتري تا چه دهد در بها

(رباعيات بايزيد بسطامي)

ای عشق تو كشته عارف و عامی را   سودای تو گم كرده نكو نامی را
شوق لب ميگون تو آورده برون   از صومعه بايزيد بسطامي را

('Ali Ḥusayn Lib., Hyderabad.) .

101.

انتخاب دواوين

Selections from the *Dīwāns* of the six following famous Persian poets :—

(1) Ḥāfiẓ Shīrāzī (d. A.H. 791 = A.D. 1388).

Beg. :— الا با ابها الساقي ادر كاسا و ناولها

End :— حافظ حديث سحر فريب خوشت رسيد

(2) Kamāl Khujandī (d. A.H. 803 = A.D. 1400).

Beg. :— افتتاح سخن آن به كه كنند اهل كمال

End :— مرا از فضل راه راست بنماي

(3) Hasan Dehlavī (d. A.H. 727 = A.D. 1326) on margins.

Beg. :— احمد الله علي معدن السلطاني

End :— بر زلف تو دست كس نيايد زاغست

(4) Nāṣir Bukhārī (d. A.H. 772 = A.D. 1370).

Beg. :— درويش را كه ملک قناعت مسلم است

End :— درياب كه اكسير سعادت اين است

(5) Md. B. 'Abd-Allāh Kātibī Nīshāpūrī (d. A.H. 839 = A.D. 1435) on margins.

Beg. :— نقد گنجينهٔ اين سينهٔ ويراني ما

End :— ختم كن حق باد يار و حافظت

(6) Ibn Yamīn[1] (d. A.H. 745 = A.D. 1344).

Beg :— الهي زبان مرا در سخن

End :— گوشهای ابرویت بیداد بی خم میزند

The copy is extremely valuable, written in beautiful Nasta'līq, illuminated throughout with gold. Undated, but seems to be very ancient.

(Mahbūb Yār Jang Lib., Hyderabad.)

102.

برهان السعادت

An autograph commentary upon the famous *Haft-Band* (هفت بند) of Afdal al-Dīn, of Kāshān, called Bābā Afdal Kāshī, died A.H. 707 = A.D. 1308. (See *Bodl Lib. Cat.* No. 749)

Commentator :—Md. 'Alī B. Md Ṣādiq al-Ḥusaynī al-Nīshāpūrī. Composed in the time of Sa'ādat Ālī Khān, A.H. 1212-1229 = A.D. 1797-1813, Nawwāb of Oudh,

Written by the commentator himself as mentioned in the colophon :—

العبد الاقل محمد علي ابن محمد صادق الحسيني النيشاپوري ... قد الف هذا الكتاب و كتبه بخطه -

Written in Shikastah-Āmīz Ta'līq. First two folls. are illuminated.

Beg :— الحمد لله الذي خلق الانسان لعبادته و اصطفاه على ما سواه

(R. S. Lib.).

103.

بیاض اشعار

An extensive collection of Persian poetical works of kings, princes, nobles and eminent poets. It is divided into seven Firqahs فرقه :—

(۱) سلاطین صفویه - (۲) سلاطین گیلان - (۳) سلاطین دودمان صاحبقران - (۴) سلاطین دکن - (۵) سلاطین مقدم و موخر هر کشور - (۶) جمعی که از طرف مادر نسب شان بسلسله صفویه میرسد باشرف دامادي این خاندان یافته

---

[1] A magnificent copy of the *Muqaṭṭa'āt-i-Ibn Yamīn* was seen by me at Benares. It was in the library of the Emperor Shāhjahān and bears his autograph on the fly-leaf and was transcribed by the famous calligrapher Sultān 'Alī Mashhadī. (See for Sultān 'Alī Mashhadī's life and another autograph No. 36 and footnote No. 2.)

اند - (۷) صدور و وزراء و امراء و اطبای مقرب سلاطین و بعضی احبّای معاصرین - الخ -

A detailed index is given at the beginning. Faṣl I and II are wanting. Written in finest Ta'līq and Shikastah, within gold-ruled columns and borders.

Beg. :— بیستون نالهٔ زارم چو شنید از جا شد - الخ

(R. S. Lib.).

104.

جریدهٔ کلان (رباعیات)

Some Persian quatrains written in elegant Ta'līq by 'Abd al-Rashīd Daylamī[1] (d. A.H. 1085 = A.D. 1674), an eminent calligrapher of the Emperor Shāhjahān's time (A.H. 1037-1069 = A.D. 1628–1659). The MS. bears a very nice picture of the scribe 'Abd al-Rashīd. Dated A.H. 1033 = A.D. 1623.

(Khalīl al-Dīn Aḥmad Lib., Benares.)

105.

دیوان آهي چغتائي

The lyrical poems of Āhī (d. A.H. 927 = A.D. 1520). See for details, *Sprenger Catalogue*, p. 327, and *Sham'-i-Anjuman* (شمع انجمن), p. 63. The *Dīwān* consists of *Ghazalyāt* and nine *Rubā'īyāt*. Written in Shikastah.

Beg. :—
ای صد خجالت از گل روی تو لاله را
ماند غزال چشم تو چشم غزاله را

(R. S. Lib.).

106.

دیوان آذر

The lyrical poems of Ḥājī Luṭf 'Alī Beg, with the takhallus *Āẓar* (d. A.H. 1195 = A.D. 1780). For another copy and references to his life and works *vide O.P. Lib. Cat.* (Bankipore), Vol. III, No. 400, p. 219. The *Ghazalyāt* are arranged in alphabetical order. Written in Shikastah-Āmīz Ta'līq.

---

[1] This celebrated penman, better known as Āqā Rashid, was the sister's son of Mīr 'Imād Qazvīnī (d. A.H. 1024 = A.D. 1615). Mīr 'Imād, a Nasta'līq writer of great repute, lived in Isfahān under Shāh 'Abbās I [A.H. 996–1038 = A.D. 1587–1628]. He was assassinated at the instigation of the Shāh, to whom he was hateful as a Sunnī, and had given personal offence. (See *Riyāḍ al-Shu'arā'*). He went to India where he founded a school of calligraphy, and died in Agra. See *Tārīkh Muhammadī*. A copy of *Yūsuf Zulaykhā* penned by Mīr 'Imād is in the *O.P. Lib.* See Vol. II, No. 197, p. 80.

Beg. :—

دور از تو جان بیرون دشوار بود یارا
گر بیتو زنده ماندیم معـــذور دار مارا

(R. S. Lib.).

107.

دیوان ابجدي

Lyrical poems by Mīr Ismā'īl Khān of Madras, poetically called *'Abjadī* (d. A.H. 1193 = A.D. 1779). See for author and his works *Tazkirah-i-Gulzār* (composed in A.H. 1269 = A.D. 1852), (see *J.A.S.B.*, 1917, Vol XIII, p. lxxxii). pp. 22-27, *Sprenger Cat.*, pp. 307-308, *O.B.D.* and *Tazkirah-i-Subh-i-Watan*, p. 27. For another copy see *A.S.B. Lib. Pers. Cat*, p. 103, and my *Pers. Note* on *Mathnawī Haft Jawhar* (No. 219), another work by the same author

Written in ordinary Ta'līq. Not dated.

Beg. :— ای نام تو مفتاح در نطق و بیانها

(M. A. Bārī Lib., Firangī Maḥall, Lucknow.)

108.

دیوان ادهم

The lyrical poems of Mīrzā Ibrāhīm, poetically called "*Adham*" (d. A.H. 1060 = A.D. 1649). The author came to India in the time of the Emperor Shāh Jahān. See for author's life *Sham'-i-Anjuman*, p. 41. Written in Ta'līq. Frontispiece illuminated. Not dated.

Beg. :—

از تاب آفتاب رخت در جســـد مرا
سوزد چو شمع مغز نفس تا ابد مرا

(R. S. Lib.)

109.

دیوان استغنا

The lyrical poems of Mīrzā 'Abd al-Rasūl, of Kashmīr, poetically called "*Istighnā*", who died in the time of the Emperor 'Ālamgīr (A.H. 1068-1118 = A.D. 1651-1706) as noticed in *Br. Mus. Pers. Suppl. Cat.* No. 111, and see also *Rūz Raushan*

(روز روشن) and *S̲h̲am'·i Anjuman* (شمع انجمن), p. 28. Written in Ta'līq. Some folls. are wanting at the beginning.

Beg. :—

یار دل باش زبان گرد زبان گردان ما
گشته صاحب مغز از نامت سر دیوان ما

(R. S. Lib.)

110.

دیوان اطعمه موسوم بکنز الاشتها

A curious but very interesting work consisting of parodies by Abū Isḥāq, known as Ḥallāj and Aṭ'imah (d. A.H. 827 = A.D. 1423). See for author *Natā'ij al-Afkār* of Qudrat-Allāh, Gupāmavī, p. 19. For notice of the work see *H. K̲h̲.*, Vol. V, p. 248, *Sprenger Cat.*, p. 68, and *Ṣubḥ Gulshan*, p. 63. The author quotes verses from well-known poets to each of which he adds a number of his verses of the same metre. In those verses the author mentions the various kinds of delicious foods and table luxuries as :—

(سعدي)

بامدادان که تفاوت نکند لیل و نهار

خوش بود دامن صحرا و تماشای بهار

مصنف

بامدادان که بود از شب مسیم خمار

پیش ما جز قدح بورق و پرسیر میار

حافظ شیرازي

اگر آن ترک شیرازي بدست آرد دل ما را

بخال هندویش بخشم سمرقند و بخارا را

مصنف

بنزدم چون خراساني گر آری صحن بغرا را

ببوی قلیه اش بخشم سمرقند و بخارا را

عماد فقیه

مگر فرشتهٔ رحمت نیـــاید از در ما

که شد بهشت برین کلبهٔ محقر ما

مصنف

مگر که شمع مزعفر در آمد از در ما
که بر فروخت ازو سفرهٔ معقر ما

سلمان ساوجي

مشنوای دوست که غیر از تو مرا یاری هست
یا شب و روز بجز عشق توام کاری هست

مصنف

مشنوای نان که بجز دنبه مرا یاری هست
یا بجز مالش چنگال مرا کاری هست

Written in Ta'līq. Dated Ajmīr, 43 years after the (Julūs) of the Emperor Awrangzib = A.H. 1111 = A.D. 1699. Fol. I is wanting in the beginning).

Beg. :— .... و مربای به و پالنگ بشیرهٔ صورت پرورش داد

(R. S. Lib.)

111.

(دیوان بلیغ) تلوین الخیال

A *Dīwān* of *Balīgh*, composed in A.H. 1168 = A.D. 1754. For author and his other works see *Sprenger Cat.*, p. 371. Another poet Shāh Md. Rūḥ-Allāh with the Takhallus of *Balīgh* mentioned in the *Taẕkirah-i-Gulzār-i-A'ẓam* (composed by Nawwab Md. Ghawth Khān in A.H 1269 = A.D 1852, see *J.A.S.B.*, 1917, Vol. XIII, p. lxxxii. my *Pers. Notes*) was born in A.H. 1230 = A.D. 1814. See *Taẕkirah-i-Gulzār-i-A'ẓam*, pp. 132-137.

Beg :— صفحهٔ اول بود روی تو در دیوان ما

(Ḥājī Ḥabīb-Allāh Lib., Nellore.)

112.

دیوان بهلول

The lyrical poems of '*Bahlūl*,' who died before A.H. 970 = A.D. 1562 as noticed in *Br. Mus. Pers. Cat.*, p. 659, and *Sprenger Cat* p. 370. For details and another copy see *O.P. Lib. Cat.* (*Bankīpore*), Vol. II. No. 240, p. 161. Written in fine Ta'līq. Dated A.H. 1090 = A.D. 1679. Some portions of the MS. are worm-eaten.

Beg. :—

شبنمي از بحر و دشت عشق شد گل خاک ما
مخزن اسرار شد خاک گل نمناک ما

(R. S. Lib.)

113.

دیوان بیتاب

Lyrical poems by Ghulām Ḥusayn, poetically called "*Bitāb*" (d. A.H. 1259 = A.D. 1843). See for author's life and his works *Gulzār-i-A'ẓam*, pp. 113-114. Written in Ta'līq. No date.

Beg. :— مزین کردم از طغرای بسم الله دیوان را

(Wajid Ḥusayn, Lucknow.)

114.

دیوان بیدار

The lyrical poems of Mīrzā Muḥammadī of Akbarābād (a disciple of Fakhr al-Dīn of Delhī (d. A.H. 1199 = A.D. 1784). See *Anwār al-'Ārifīn* of Md. Ḥusayn of Murādābād, pp. 431-2. For author's life see *Rūz Rawshan* (روز روشن), p. 114. Written in bad Ta'līq.

Beg. :—

بجرم عشق تو سازند گر مرا تشهیر
سزا است انچه کنند از عقوبت و تغریر

(R. S. Lib.)

115.

خلد بیمثال

A collection of Persian poetical works, collected and written by Mīrzā Ghulām Md. by the order of Aḥmad 'Alī Khān, Nawwāb of Rāmpore. The title of the MS. is a chronogram for A.H. 1227 = A.D. 1812, as mentioned in the preface :—

یکایک ریخت در دل فکر سالي   خرد فرمود خلد بیمثالي
١٢٢٧

Written in good Ta'līq, gold-ruled borders, 'Unwān illuminated.

Beg. :—

ای شوق تو آورده بلبیک حرم را
یاد تو باندیشه فرو برده صنم را

(R. S. Lib.)

116.

ديوان تبريزي

A *Dīwān* by Md. Husayn Tabrīzī, poetically styled "*Ma'lūm.*"

The *Dīwān* Murtaḍā Qulī Beg '*Wāla*" (d. c. A.H. 1100 = A.D. 1688) is on the margin. For life of Wālā, see *Br. Mus. Pers. Cat.*, p. 796*b*.

Slightly defective at the end. Written in elegant Ta'liq. No date.

(Nawwāb Iḥtishām al-Dawlah Lib., Madras.)

117.

ديوان تائيد

The lyrical poems of Khwājah 'Abd-Allāh, poetically called "*Tā'īd*," who died according to the chronogram in *Nishtar-i-'Ishq* in A.H. 1186 = A.D. 1772 (of this library):—

چو آن خواجهٔ شاعران فصيح   ز دنيا سوی خلد بگرفت راه
سنِ رحلتش زد رقم عاشقي   ز اهل سخن بود تائيد آه

But according to Md. 'Alī, poetically called "*Tamannā*" (author's son), in A.H. 1206 = A.D. 1791:—

قبلهٔ و کعبهٔ دارين جناب تائيد   که بروحش ز خدا باد هزاران برکات
بود اسم متبرک بجهان عبد الله   صرف در طاعت حق کرد گرامي اوقات
شست درنصف رجب رفت سوی دار جنان   يافت از بند پر آشوب جهان راه نجات
فکر اين واقعه چون کرد تمنای ملول   از جهان عارف حق رفته شده سال وفات

(Vide *Subḥ Gulshan*, p. 79.)

Written in cursive Ta'līq. Not dated.

(R. S. Lib.)

118.

ديوان جرأت

The poetical works of Sayyid Ja'far, poetically called "*Jur'at*" who flourished in the time of the Emperor Md. Shāh. See *Nishtar-i-'Ishq*, fol. 165*b* (of this library). Written in Shikastah. Dated 9 accession (جلوس محمد شاهي).

Beg.:—

تا کی دلم آئينه بود پيکر غم را
يا رب سحر عيش کن اين شام الم را

(R. S. Lib.)

119.

دیوان حبیب

The Ṣufic lyrical poem of Shāh Ḥabīb of Bukhārā as mentioned at the end of the MS. :—

اتمام یافت و اختتام پذیرفت کتاب دیوان تصنیف مرحومی مغفوری میان شاه حبیب بخاري غفر ذنبه و عطاء مرحمته و منور مرقده

Written in finest Ta'līq on gold-sprinkled paper. Gold-ruled borders. Not dated.

Beg. :—

اندر کنـــار جانان اسرارها بگفتم
جبریل با ملایک اندر میان نگنجد

(R. S. Lib.)

120.

دیوان چهارم حزین

A very valuable copy of a few selections from the fourth Dīwān of the celebrated poet 'Alī Ḥazīn (d. A.H. 1180 = A.D. 1766), revised by the poet himself as well as by his learned pupil the celebrated poet 'Alī Qulī Khān. *Wālih* Dāghistāni (d. A.H. 1169 = A.D 1755) the author of the most popular Persian anthology *Riyāḍ al-Shu'arā*, composed A.H 1161 = A.D. 1747

The following subscriptions at the end of the copy support the above statement :-

این چند قصیده و غزلیات ز دیوان چهارم این نو رسته گفتار بیکرد او که حسب الفرمان واجب الاذعان زیبنده و مسند مناصب اجلال سلالهٔ دودمان حشمت و اقبال نتیجة الامراء الفخام صدیق شفیق ودیق علی قلي خان اعز الله انصاره و ایّد بنصره انتساخ شده بود و بنظر رسیده مقمی که داده شد باصلاح پیوست امید که فیض اصلاح پرتو نظر قبول صاحبدلان یابد - فقیر خاکسار محمد علي حزین اعطاه الله نورا یمشي به یوم الدین -

بتاریخ شهر محرم الحرام سنه ١١٤٩ هجري ١٧٣٦ ع این کتاب مستطاب که دیوان چهارم جناب قدسي القاب شیخ الاجل الاکرم و مومی الاعز الاعظم مولانا و مولوي العارفین صاحبنا و شیخنا و استاذنا شیخ محمد علي حزین روحي فداه و سلمه الله تعالی هست حسب الخواهش فقیر کثیر التقصیر در دار الخلافة دهلي کاتب کشمیري کتابت نموده باتمام رسید اول خود مرور نمود و ثانیا از نظر فیض منظر آن قدوهٔ عالم و زبدهٔ بني آدم گذشت اگر غلطي

بنظر نرسیده و از نظر افتاده باشد از جانب فقیر حمل به بیدانشي و از جانب
آن قمر رکاب مضمون این بیت را پیش نهاد خاطر داشته باشند - ـــه

گهی بر طارم اعلی نشینـــم گهی بر پشت پای خود نه بینم

العبد العاصي ابن مرحوم محمد علي غفر له علی قلي داغستاني
المتخلص بواله - تحریر في شهر جمادی الثاني سنه ۱۱۴۹ هجري

Written in Ta'līq. Dated A.H. 1149 = A.D. 1736.

(M. 'Alī Ḥusayn Lib., Hyderābad.)

121.

دیوان حسین

The lyrical poems of Ghulām Husayn, poetically called *Husayn*, Nawwāb of Shāhjahānpūr, who died, according to the chronogram found in Nawwāb 'Abd al-Azīz's poetical work, in A.H. 1292 = A.D. 1875 :—

نواب عالي خاندان چون کرد از دنیا سفر
از مردنش زایل شده رونق ز بزم دوستـــان
جستم چو سال فوت او بر خواند هاتف مصرعهٔ
پرواز کرده از چمن این عندلیب بوستان
۹۲ ‒ ‒ ۱۲

It appears from a note by Nawwāb Kalb 'Alī Khān that this MS. was entered in the library in A.H. 1280 = A.D. 1863 :—

بسم الله الرحمن الرحيم - الحمد للّٰه که دیوان بلاغت عنوان مشفقي
محبي نواب غلام حسین خانصاحب شاهجهانپوري ز ولاد امجاد نواب دلاور
خان و بهادر خان سرداران حضرت شاهجهان بادشاه غازي انار الله برهانه بوده -
بتاریخ بست و دوم جمادی الثاني سنه ۱۲۸۰ هجري مقدسه [۱۸۶۳ع] داخل
کتب خانه [نیازمند] گردید - محمد کلب علیخان عفي عنه -

(R. S. Lib.)

122.

دیوان حیا

The lyrical poems of Shew Rām Dāss, poetically called "*Hayā*" (d. A.H. 1144 = A.D. 1731). See *Subh-Gulshan* (صبح گلشن), p. 144, and for another copy see *Bodl. Lib. Cat.* No. 1171, and *Sprenger Cat.*, p. 154. Written in Ta'līq, within red-ruled borders. Dated A.H. 1227 = A.D. 1812.

Beg. :— مي برد دير و حرم از خود دل ديوانه را
طرح صحبت باد شمع افتاد اين پروانه را

(R. S. Lib.)

123.

ديوان خواجو كرماني

A rare Dīwān of Khwājū whose full name was 'Aṭā Maḥmūd B. 'Alī, poetically surnamed '*Khwājū*.' He was a native of Kirmān and he died at Shīrāz in A.H 753 = A.D. 1352. See *Br. Mus. Pers. Cat.*, p. 620; *Sprenger Cat.*, p. 471; *H. Kh.* III, p. 279; *Pertsch, Berl. Lib. Cat.*, pp. 6 and 70, and *G. Flugel.* I, p. 544. and *Mīr'at al-Khayāl* of Shīr Khān Lūdī. Āgha Ahmad Alī gives his date of death A.H 742 = A.D. 1341 See *Haft Āsman*, p. 77.

Wanting some pages at the beginning.

Written in good Ta'līq. Not dated. Old copy.

A copy of the *Kullīyāt* and five poems of Khwājū mentioned in *Sprenger Oudh Cat.*, pp. 471-473, three poems in the *Brit. Mus. Pers.. Cat.*, p. 620:—روضة الانوار - كمال نامه - هماى همايون —*A S.B. Lib.* has a fine copy, dated A.H. 991, and containing three poems كمال نامه - هماي همايون - گوهر نامه (see p. 97), one *Mathnavī* هماى همايون is *Ind. Off. Lib. Cat.* No. 1234 and one *Calcutta Madrasah Library* (see *Cat. Ar. and Pers. MSS.*, p. 108). and has one old *Dīwān* Abu'l Ḥasan Ḥaqqānī, bookseller of Delhī; for details see *Bodl. Lib. Cat.*, Nos. 794, 796 and *Haft Āsmān*, p. 77.

(Hājī Habīb-Allāh Lib , Nellore.)

124.

ديوان حافظ

Very excellent and valuable *Dīwān-i-Hāfiẓ* with the preface of Gul Andām (d. A.H. 791 = A.D. 1388). Apart from its remarkable calligraphy, this MS. is noteworthy on account of the exquisite illuminations and the very artistic and finished drawings in gold on the margins which display to great advantage the Abrī paper of those times. There are also eleven miniatures in excellent style, including one of Akbar receiving three literary men. Evidently the MS. was designed and prepared for Akbar. Nawwāb Kalb 'Alī Khān purchased this MS. for Rs. 50 only, as appears from a note on fly-leaf :—

الحمد لله كه نسخهٔ متبركهٔ هذا بتاريخ پنجم جمادى الاولى سنه ۱۲۷۳ هجري از محمد اكرم نبيرهٔ حافظ خورشيد خوشنويس لكهنوي بقيمت پنجاه روپيه خريده شد - محمد كلب علي خان عفي الله عنه -

(R. S. Lib.)

125.

دیوان حافظ

Dīwān-i-Ḥāfiz with the same preface. This copy was presented by the Hon'ble Sir Alfred Lyall, Lt.-Gov. of North Western Provinces, to Md. Mushtāq 'Alī Khān (d. A.H. 1306 = A.D. 1888-1889), Nawwāb of Rāmpore, in the year A.H. 1304 = A.D. 1887. Written by some distinguished calligrapher in perfect Ta'līq. Dated A.H. 971 = A.D. 1563.

(R. S. Lib.)

126.

دیوان حافظ

Another valuable copy of the *Dīwān-i-Ḥāfiz* is in the library.

(R. S. Lib.)

127.

دیوان حافظ محشی

A very beautiful and valuable copy of the above work with a preface by Gul-Andām. It has short glosses on the margin, and contains 38 miniatures of fine style Highly illuminated. Written by the order of Nūr-Allāh Khān B. Khudā Dād Khān, in A.H. 1217 = A.D. 1802, in Ta'līq.

(R. S. Lib.)

128

شرح دیوان حافظ

A glossary of the *Dīwān-i-Ḥāfiz* by Bahlūl Kūl B. Mīrzā Khān al-Barkī of Jālandhar. Composed in A.H. 1132 = A.D. 1719, after a labour of 17 days :—

در هفده شبا روز رقم اندوز شد و ابیاتي که در دیوان مرقوم با یکدیگر
در مضمون متحد و متفق بودند یکجا جمع ساخته اند تا از ترجمه یک بیت
معني هر واحد ازین ابیات حل شود -

Written in Nīm-Shikastah by the author's pupil. Dated A.H. 1140 = A.D. 1727.

Beg. :—حمد مر حافظی را که شمس دین محمدي را علیه و علی
آله و اصحابه کالنّجوم الخ

(Ḥāfiz Ahmad 'Alī Khān Lib., Rāmpore.)

129.

خلاصة البحر فی التقاط الدهر

A commentary upon the *Dīwān-i-Ḥāfiz.*

Commentator :—'Abd-Allāh, better known as 'Ubayd-Allāh Khalīfahjī B. 'Abd al-Ḥaqq, called 'Abd al-Qādir Khuwayshkī, Chishtī. Written in elegant Ta'līq.

Scribe :—Dārā Shikūh (d. A.H. 1069 = A.D. 1658), who was a disciple of Sayyid Ādam Rasūl of Māwarā'al-Nahr as would appear from the colophon. See for details and another copy, *Ind. Off. Lib. Cat.* No. 272.

·Beg. :— سپاس و ستایش خداوندی را که اولیای خود را الخ

(Nizām Lib., Hyderabad.)

130.

دیوان خاموش

The poetical work of Rāi Ṣāḥib Rām, poetically called "*Khāmūsh*" who died previous to A.H. 1229 = A.D. 1812. See *Sprenger Cat.*, p. 461, and for other copies see *O.P. Lib. Cat.* (Bankipore), Vol. III, p. 260. No. 432 and *A.S.B. Lib. Cat*, p 108.

Written in careless Shikastah. Not dated.

Beg. :— اگر یاری نماند دررة او همت دلها
تاآهی میتوان خون برق کردن قطع منزلها

(R. S Lib.)

131.

دیوان دانا

The poetical work of Mīr Dānā, probably Mullā Dānā who was engaged in Farrukh Siyar's reign (A.H. 1124-1131 = A.D. 1712–1718) with Nāẓim Khān, usually called 'Abd al-Raḥīm "*Fārigh*," in copying the *Shāhnāmah.* See *Sprenger Cat.*, p 122, and *Ṣubḥ Gulshan*, p. 159.

Written in Ta'līq. Not dated.

Beg. :— بیــا ای طالب دانا بدان اسرار آدم را
که استـــاد ملایک شد زراه علّم الاسماء

(R. S. Lib.)

132.

دیوان دانش

The lyrical poems of Rāzī Mashhadī, poetically called "*Dānish*" (B. Mīr Abū Turāb) (d. A.H. 1076 = A.D. 1665). See, for author's life, *Nishtar-i-‘Ishq*, fol. 252 [of this library], and *Sham* ‘i-*Anjuman* (شمع انجمن), p. 146.

Written in Shikastah in the 10th year of Muhammad Shāh.

Beg. :— همچو بوی گل که مي بيند درين بستان مرا
تا تواني كردة است از ديدها پنهـــان مرا

(R. S. Lib.)

133.

ديوان ديدة

The poetical work of Nawwāb A‘izz Khān Tarkamānī, poetically called "*Dīdāh*" (d. c. A.H 1200 = A.D. 1785). See, for author's life, *Sham‘-i-Anjuman*, p. 157.

Written in Shikastah and Tālīq. Not dated

Beg. :— بود افلاک دود خرمن از خود دمیدنهـــا
زمین باشد غبار توسن در خود رسیدنهـــا

(R. S. Lib.)

134.

ديوان ذرّة

The lyrical poems of Bachchū Beg, poetically called "*Zarrah*," composed, according to *Sprenger Cat.*, p. 389, in A.H. 1188 = A.D. 1774. The chronogram mentioned by Dr. Sprenger does not appear in this copy. The beginning of the MS. is also different from that in *Sprenger Cat.* There are two other poets with the Tokhallus. "*Zarrah*" mentioned in *Ṣubḥ-Gulshan*, p. 166.

Written in Ta‘līq. within red-ruled borders. Dated A.H. 1234 = A.D. 1818.

Contents :— رباعيات and دبوان - قصايد

Beg. :— دارم بدوست شرح غم انتظـار عرض
يـا نا شکیبي دل امیـــد وار عـــرض

Beg. :— رحم دة بار خدا اين ز خدا دوران را
يا شکیبی و قراری دل مهجوران را

Beg. :— چون بود ولای شاة دین حبل متین
بی شبه زدم بدامنش دست یقیـــن

(R. S. Lib.)

135.

رباعيات مقصود عالم

According to a marginal note written in a different hand the author of these *Rubā‘īyāt* is Maqṣūd ‘Ālam مقصود عالم who was in the service of the Emperor Shāhjahān (A.H. 1037-1069 = A.D. 1628-1659). The author was a native of Gujrāt and died at Lāhore in A.H. 1059 = A.D. 1649. See *Rawḍāt Shāhī* (No. 85). Compiled by his son Md. Ja‘far. See, for author's life, *Tazkirah-i-‘Ulamā’-i-Hind*, p. 216, *Sprenger Cat.*, p. 445.

Written in good Ta‘līq. Undated.

Beg. :— نیرنگي ما رنگ نگارست اینجا -

(Wajid Ḥusayn, Lucknow.)

136.

ديوان رضا اصفهاني

The lyrical poems of Mullā Riḍā Iṣfahānī, poetically called "*Riḍā*." See, for author's life. *Sham‘-i-Anjuman* (شمع انجمن), p. 170.

Written in Ta‘līq.

Beg. :—

زهی از گوهر نام تو روشن خانۂ دلها
بتوحید تو سر گرّم نکلّم حق و باطلها

(R. S. Lib.)

137.

ديوان رفعت

The lyrical poems of Ghulām Jīlānī of Rampore, poetically called '*Rif‘at*' (d. A.H. 1235 = A.D. 1819). See, for author's life, *Intikhāb-i-Yādgār* of Amīr Mīnā’ī (d. A.H. 1318 = A.D. 1900).

Written in Shikastah in the author's lifetime. Dated A.H. 1230 = A.D. 1814.

Beg. :—

چون ز بسم الله زیبا شد سر عنوان ما
نقطه اش گردید خال چهرۂ دیوان ما

(R. S. Lib.)

138.

ديوان ملا ساطع

The lyrical poems of Mullā Sāṭi‘ who was alive in A.H. 1136 = A.D. 1723, in the time of Bahādur Shāh (1118-1124 =

A.D. 1706–1712). For author and his works see *Sprenger Cat.*. pp. 122, 156 and 560.

Written in Ta'līq. No date.

Beg. :— بآب و رنگ حمدت برگ گل گردن زبانم را

(Al-Nadwah Lib., Lucknow.)

139.

ديوان سامي

The lyrical poems of a poet with the Takhallus "*Sāmī*" identical with Khwājah 'Abd-Allāh Sāmī who was in the service of A'ẓam Shāh and died in the time of Muḥammad Shāh (A H. 1131-1161 = A.D. 1719-1748) at Lahore; see *Sprenger Cat.*, p. 156, and *India Office Lib. Cat* No. 1704.

Written in Nasta'liq on gold-sprinkled paper. Not dated.

Beg. :— چون ز بی برگي ندارد خامه در دل آه راه - الخ

(Maḥbūb Yārjang Lib., Hyderabad.)

140.

ديوان سرمد

A very interesting copy of a *Dīwān* of undotted letters. The poet calls himself '*Sarmad*,' but he must not be confounded with the celebrated mystic Sarmad of Aurangzīb's time, a short notice of whose life is given in the preface of the MS.

Preface begins thus :—- بعد حمد داور دادار و نعت سيد ابرار الخ

Written in neat Tālīq. 'Unwāns illuminated. On fol. 20*a* there are two pictures, one of Sarmad and the other of Ubbhī Chand, beloved of Sarmad.

Beg. :— حمد لاحد اله عالم را کو روا کرد کام آدم را

(R. S. Lib.)

141-142.

ديوان سردار و قصاب

Wrongly styled "*Ḥilyat al-Kumayt*" on the fly-leaf of the MS. Both the works are bound in one volume.

Written in Ta'līq. Not dated.

(1) *Dīwān-i-Sardār* begins thus :—

بعجز ارواح مکرم که ز ديوان ازل
بخداوندي شان خط غلامي دادم

(2) *Dīwān-i-Qaṣṣāb* begins thus :—

یار در سن پیر و در شهوت جوان است ای خدا
این غم دیگر که دریابی دوکان است ای خدا

Probably this is the same Qaṣṣāb whose *Kulliyāt* was deposited in the library of the Emperor Aḥmad S̲h̲āh, in the year A.H. 1176 = A.D. 1762. The verses of the *Kulliyāt* number about 3,500. See *Subḥ Gulshan* (صبح گلشن), p. 331.

(R. S. Lib.)

143.

دیوان سیادت

The lyrical poems of Mīrzā, poetically called '*Sayādat*,' who belonged to the Jamāl al-Ḥusaynī's (the author of *Rauḍat al-Aḥbāb*) family and lived at Lāhore in A.H. 1100 = A.D. 1688 and died in the latter portion of Aurangzīb's time (1068-1118 = A.D. 1657–1706). See, for author, *Nis̲h̲tar-i-'Is̲h̲q*, fol. 334*b* (of this library) and *S̲h̲am'-i-Anjuman* (شمع انجمن), p. 195.

Written in S̲h̲ikastah within red-ruled borders at the request of 'Abd al-Rasūl. 'Unwān illuminated.

Scribe :—Faqīr Muhammad.

Beg. :—

ای سوختهٔ گرمي نام تو زبانها
حیرت زدهٔ حسن کلام تو دهانها

(R. S. Lib.)

144

دیوان سید

The lyrical poems of Ṣalābat K̲h̲ān of Sūrat, poetically called "*Sayid*" (d. A.H. 1137 = A.D. 1724). See, for author's life, *Nis̲h̲tar-i-'Is̲h̲q* fol. 309 (of this library), and *Yad-i-Bayḍā*.

Written in finest Nasta'līq. 'Unwān illuminated, gold-ruled borders.

Beg. :—

آنکه شور عشق خود در انس و جان انداخته
لذت غم در دل پیــــر و جــوان انداخته

(R. S. Lib.)

145.

جُنگ هزار شکل

A very extensive collection of Persian poems with a preface, selected from the works of well-known poets. It is divided into 4 *mamsam*, subdivided into 1,000 *Faṣls*.

Author:—"*Shā'iq*," collected in the time of the Emperor Shāh 'Ālam (A.H. 1253-1274 = A.D. 1837-1857).

Written in Ta'līq, within 4 columns of red ruled and gold borders. 'Unwān illuminated.

Preface begins thus:—

شایق ارغون بهم ساز فصول بیشمار
از فریق خلق بیحد در بیاض روزگار

Beg.:—

بنـــام قدرت آن حکم ران را
بیک کن کرد پیدا این جهان را

(R S. Lib.)

146.

دیوان شایق

The poetical work of Mīr Ghulām Ḥusayn with the Takhallus. "*Shā'iq*" (d. A.H. 1243 = A.D 1827). The author flourished under Ghāzī al-Dīn Ḥyder (A.H. 1229-1242 = A.D. 1812-1826). See *Sprenger Cat.*, p. 569. For a complete copy see *Ind. Off. Lib Cat.* No. 1729.

Written in Ta'līq. Not dated

Beg.:—

نور بخش مهر و ماه و لؤلؤ لالا ستی
جلوه ساز گلشن و هم لعل وهم خارا ستی

(R. S. Lib.)

147.

دیوان شرف

The lyrical poems of Sharaf-i-Jahān (d. A.H. 968 = A.D. 1560) with a short prologue. See *Sprenger Cat.*, p. 566.

Written in Shikastah-Amīz Ta'līq. Most of the folios are damaged.

Preface begins thus:— با احسن المقال زینت باسم الخ

Beg:— وقت آن است که جان از پی جانان گردد. الخ

(R. S. Lib.)

148.

دیوان شفروه

Wrongly styled *Dīwān-i-Kamāl Khujandī* on the fly-leaf of the MS.

Author:—'Abd al-Mu'min Sharaf al-Dīn of Shufurwah

(d. c. A.H. 600 = A.D. 1203). See *Br. Mus. Pers. Suppl. Cat.* No. 239 III.

Written in S̲hikastah-Āmīz Ta'līq. Dated A.H. 1021 = A.D. 1612.

Beg. :—

حمد وثنا خالق زمین و زمان را
صانع بی آلتی همین و همان را

(R. S Lib.)

149.

دیوان شوق

An autograph copy of the *Dīwān* of *S̲hawq*, dated A.H. 1174 = A.D. 1760.

ابیات چند که از افکار ناقص فراهم شده بود بخط شکسته بسته گود برین اوراق بطریق یادگار رقمی گردید - روز چهار شنبه نهم رمضان المبارک سنه ۱۱۷۴ هجری واقعه قلعه اتک - حرره احقر الانام - متخلص بشوق

Written in S̲hikastah within gold-ruled borders. Fol. I and II richly illuminated.

Some mischievous hand has erased the name of the poet. There are 4 other poets with the Tak̲h̲alluṣ شوق who are mentioned in *Ṣubḥ Gulshan* (صبح گلشن), p. 226.

Beg. :—

گردیده است ملک جنون تختگاه ما
دیوانه ایم وزمرهٔ طفلان سپاه ما

(R. S. Lib.)

150.

دیوان شهرت

The lyrical poems of Ḥakīm S̲hayk̲h Ḥusayn with the Tak̲h̲alluṣ "*S̲huhrat*" (d. A.H. 1149 = A.D. 1736). For details see *Bodl. Lib. Cat.* No. 1178 with a different beginning, *O.P. Lib. Cat.* (Bankipore), Vol. III, No. 391, p. 206, and *Sprenger Cat.*. p. 571.

Written in Ta'līq. Another copy of the same is in this library :—

(1) Beg. :—

ای پر گل از ندای تو جیب و کنارها
مست مدام ذکر تو گلها و خارها

(2) Beg. :—

مطرب شوم چو نغمه آن دلنواز را
در گوشها یکی کنم آهنگ و ساز را

(R. S. Lib.)

151.

دیوان شهابی

The poetical works of Mīrzā Khān, poetically called "*Shīhābī.*" See, for author, *Sham'-i-Anjuman* (شمع انجمن), p. 240.

Scribe.—Md. Akbar Qarashī al-'Abbāsī. Written in Ta'līq. Dated A.H 1011 = A.D. 1602.

Beg. :— بســـم الله الرحمن الرحیــم * حمد و ثنا گویم خالق کریم

(R. S. Lib.)

152.

دیوان شیدا

The lyrical poems of Mullā Shaydā (d. A.H. 1080 = A.D. 1669). Vide *Sham'-i Anjuman* (شمع انجمن), p. 220 and *Khizānah-i-'Amirah* (خزانۀ عامرہ), p. 271. For another imperfect copy see *Br Mus. Pers. Suppl. Cat.* No 326.

Written in Ta'līq

Beg. :—

الهي پرنو از نور یقین ده شمع جانم را
بشو از حرف باطل یک قلم لوح بیانم را

(R. S. Lib.)

153.

دیوان شاه

The lyrical poems of Mīrzā Shāh Husayn (as given on the top of the 'Unwān on the fly-leaf at the beginning), arranged in alphabetical order. Written in neat Ta'līq.

Beg. :—

مسند نشین فرجۀ دبهار دور را
نقصیر عذر گفت چه شادىم زبن ادا

(R. S. Lib.)

154.

دیوان صابر

The lyrical poems of 'Alā'al-Dīn 'Alī Aḥmad "*Ṣābir.*" Arranged in alphabetical order. Name of the author appears at the end :—

تمام شد رسالۀ متبرکه فی النظم من کلام قطب العالم ... حضرت

مخدوم سید علاؤ الدین علی احمد صابر ... بتاریخ هفدهم شهر ذیقعده یوم
پنجشنبه سنه ۱۲۳۹ هجري (مطابق ۱۸۲۳ ع) در مقام مرادآباد -

It appears that the author flourished in the time of Naṣīr al-Dīn Maḥmūd (d. A.H. 757 = A.D. 1356) whom he praises in the following couplet :—

بجز ذات نصیر الدین محمود
ندیدم در جهان شاهان دهلي

Written in usual Ta'līq. Dated Murādābād (A.H. 1239 = A.D. 1823). Probably the author is Ṣābir Shāh of Delhī. See *Bodl. Lib. Cat.* for *Ṣābir* No. 1180.

Beg. :—

اگر خواهي غم و غربت طلب کن از در دلها
بکوی دلبران جان ده که گردي شمع محفلها

(R. S. Lib.)

155.

دیوان محمد صالح

The lyrical poems of Md. Ṣāliḥ. From the preface it would appear that the poet came to India during the time of the Emperor Shāh Jahān (A.H. 1037-1069 = A.D. 1028-1659) :—

محمد صالح در زمان شاهجهان از ولایت بهند آمده بیشتر در طرف دکن و بنگاله بسر برده و دیواني مختصر دارد و اشعارش شیرین و لطیف است و مدتی در خدمت شاهجهان سرآمد سخنوران بود در فن غزل سرائي طرز خاصی دارد و صاحب فکر و معني بذه مي بود این دبوان ازآن اوست -

See *Sprenger Cat.*, p. 382, for another copy with a different beginning. Written in clear Ta'līq, within gold-ruled borders The first two pages contain beautifully illuminated 'Unwāns. Dated A.H. 1260 = A.D. 1844.

Beg. :—

مهر بتان ماه جبینست کار ما
هرجا که میرویم همین است کار ما

(R. S. Lib.)

156.

دیوان صامت

The lyrical poems of Ḥājī Ṣādiq Iṣfahānī, poetically called "*Ṣāmit*." The author came to India during the time of the Emperor 'Ālamgīr (A.H. 1069-1119 = A.D. 1659-1707). See for author *Sham'-i-Anjuman* (شمع انجمن), p. 266. Written in neat Ta'līq.

Beg. :—

چنان بر یکدیگر پیچیدہ زلفش داستانم را
که غیر از شانه دربزمش نمي فهمد زبانم را

(R. S. Lib.)

157.

دیوان صبري

The lyrical poems of Mīr Ṣabrī Rūz Bahān who lived in the time of Shāh Ṭahmāsp Ṣafavī (A.H. 930-984 = A.D. 1523-1576). See *Nishtar-i-'Ishq*, foll. 383-384 (of this library) and *Ātashkadah* (Bombay ed.), p. 149. Written in clear Ta'līq.

Beg. :— نمي خواهد دلم بیدرد داغش زندگاني را

(R. S. Lib.)

158.

دیوان طوسي

A rare, old, and valuable copy of the lyrical poems of 'Abd-Allāh Ṭūsī, a native of Khurāsān who died in A.H. 869 = A.D. 1464. The poems are arranged in alphabetical order. Written only one year after the author's death. Fine Nasta'līq. Dated A.H. 870 = A.D. 1465.

For author see *Daulatshāh*. Some select Ghazals are quoted in the *Br. Mus. Pers Cat.*, p. 735^a, and *Br. Mus. Suppl. Pers. Cat.*, No. 286.

(Maḥbūb Yār Jang Lib., Hyderabad.)

159.

دیوان عاشق

The poetical works of '*Ashiq*[1] ? The proper name of the author is Mīr Qāsim Khān, which appears on the fly-leaf of the MS. Another poet with the takhallus '*Āshiq* is mentioned in the *Br. Mus. Suppl. Pers. Cat.*, Nos 340 and 341, *O.P. Lib. Cat.*, Vol. III, No 415. Written in Nasta'līq, within red-ruled borders. Not dated.

Beg. :—

ادب در سرمه مي پیچد زبان عجز فرسا را
نفس خون گشته مي نالد که روشن کن معما را

(R. S. Lib.)

---

[1] See *Sprenger Cat.*, pp. 204-205 for Mahdī 'Alī Khān.

160-161.

ديوان عاصي

The lyrical poems of Nawwāb ‘Abd-Allāh K͟hān (B. Nawwāb ‘Alī Md. K͟hān of Rampore) with the Tak͟hallus̤ “ ‘*Āṣī*.”

The author died in Ujhyānī, a small town in Rohilkhand in A.H. 1181 = A.D. 1767. Collected and transcribed by the order of Nawwāb Naṣr-Allāh K͟hān, B. Nawwāb Mḍ. ‘Abd-Allāh K͟han of Rampore (d. in A.H. 1225 = A.D. 1810). For author’s life see *Intik͟hāb Yādgār* of Amīr Mīnā’ī (انتخاب يادگار مؤلفه امير مينائي), pp. 19-21.

Scribe :—Fayḍ ‘Alī B. Md. Qāsim. Written in Ta‘līq. Dated A.H. 1192 = A.D. 1778.

Preface begins thus :—

سپاس بيقياس و نياز بارگاه حقيقي كه بيک كن فيكون

Beg. :—

ز دم چتری نفرق از مد بسم الله عنوانها
نشاندم برسر تخت خرد طبع سخندان را

(R. S. Lib.)

162.

ديوان عبرت

The lyrical poems of Mīr Ḍiyā’ al-Dīn “ ‘*Ibrat*” (as written on the first fly-leaf). The *Dīwān* contains 89 quatrains. Written in S͟hikastah on blue paper.

Beg. :—

جز حمد او بهيچ نگردد زبان ما
گويا بحرف اوست زبان و دهان ما

(R. S. Lib.)

163.

ديوان عترت

The lyrical poems of Mīr Md. of Akbarābād. See for author *Rūz Rawshan* (روز روشن), p. 444. Written in Ta‘līq.

Beg. :—

بذكر خويش تا رب رنگ ده چون گل بيانم را
چو سوسن لال گردان جز بحمد خود زبانم را

(R. S. Lib.)

164.

ديوان عزلت

The poetical work of ‘Uzlat Dīwānah (as written on the top of the ‘Unwān). Written in clear S͟hikastah. Incomplete copy.

Beg. :—

گشت تقريب ثنا بسم الله عنوان مرا
نام او شد سرنوشت جبهه ديوان مرا

(R. S. Lib.)

165.

ديوان عشقي

The lyrical poems of Ghulām Hadrat, poetically called '*Ishqī*' as mentioned in the preface, composed in A.H. 1242 = A.D. 1826. The author dedicated the work to Ahmad 'Alī Khān, Nawwāb of Rampore. The author further states in the preface that he was a pupil of Mīrzā Qatīl (d. A.H. 1233 = A.D 1817). Written in Ta'līq. Not dated.

Preface begins thus :—حمد سخن آفريني كه زبان

Beg. :—

ز قيد هستي خود پرستي اگر گذاري دلا برون پا
تفوز فوزاً تعيش عيشاً تنال فرحاً تدوم حيّا

(R. S. Lib)

166.

ديوان عصمت بخاري

The poetical works of 'Ismat Bukharī (d. A.H. 829 = A D. 1425). For other copies see *Br. Mus. Suppl. Per Cat.* No. 282 and *Bodl. Lib. Cat.* No. 861

Written in elegant Ta'līq. Gold-ruled columns. 'Unwān beautifully adorned in gold and *ultramarine.* Valuable copy. Dated A.H. 1030 = A D. 1620.

Scribe :—Mīrak Bukhārī The MS. bears three stamps of the following three kings of Oudh :—

(محمد علي)	(امجد علي)	(سليمان جاه)
Md. 'Alī.	Amjad 'Alī.	Sulaymān Jāh

(R. S. Lib.)

167.

ديوان غريب

The lyrical poems of Gharīb, who is quite different from the poets with the same Takhallus mentioned in *Nishtar-i-'Ishq, Rūz Raushan* and *Sham'-i-Anjuman.*

Written in Nīm-Shikastah. Dated A H. 1217 = A.D. 1853.

Beg. :—
ای زاني كوكة گوند شكر احسانى ترا
كى در آرد در حبــاب آب عمان ترا

(R S. Lib.)

168.

ديوان غياثي

The lyrical poems of G̲h̲iyāt̲h̲ al-Dīn poetically called "G̲h̲iyāt̲h̲ī," who was a disciple of Ahmad Sirhind called *Mujaddid-i-Alft̲h̲ānī* (d. A.H. 1033 = A.D. 1623) as he states in fol. *5a*. (See for *Alft̲h̲ānī*, *O.B.D.*, p. 42.)

بجان و دل غياث الدين غلام شاه سرهندم

Written in irregular Taʻlīq. Not dated. Defective at the end.

Beg. :— چهدا حمد توگويم كه تو فياض عميمى

(M. A. Bārī Lib., Ferangī Mahall, Lucknow.)

169.

ديوان غيوري

The poetical works of Lac̲h̲man Singh, with the Tak̲h̲alluṣ '*G̲h̲uyūrī*' of Delhī. He was a pupil of Mīr S̲h̲ams al-Dīn Faqīr (d. A.H. 1183 = A.D. 1769). For this G̲h̲uyūri see *Rūz Raus̲h̲an* (روز روشن), p. 498. Written in Taʻlīq. Not dated.

Beg. :—
غيــرت نمي گذارد گفتى اگرچه يارا
از بهــر خاطر من با غيــر كن مدارا

(R. S. Lib.)

170.

ديوان فايز

The lyrical poems of "*Fā'iz*". It contains a preface by Ṣadr al-Dīn Md. B. Zabardast K̲h̲ān (A.H. 1151-1161 = A.D. 1738-1747), the author of the work called *Irs̲h̲ād al-Wazarā*. See *Br. Mus. Pers. Cat.*, p. 338, and *Sprenger Cat.*, p. 127.

Written in good Taʻlīq. Not dated.

Beginning of the preface :— الحمد لمن ابتدع نوع الانسان و كلمة الخ

,, of the Dīwān :— بسم اللّٰه است زيب بهار سفينه ها

(Wājid Ḥusayn, Lucknow.)

171.

دیوان فایز

The lyrical poems of ‘Alī Gīlānī, poetically called "*Fai'z,*" with a preface, composed in A.H. 1112 = A.D. 1700.

The author composed the following chronogram on the conquest of Golconda by ‘Ālamgīr (A.H. 1069-1119 = A.D. 1659-1707). See fol. 60*b*. The year 1082 is deduced from it :—

سال این فتح چو از پیر خرد جستم گفت
قلعهٔ و ملک ز تائیـد الهي بکشـــاد
١٠٨٢

For author see *Rūz Rawshan* (روز روشن), p. 502, and *Sprenger Cat.*, pp 402 and 158.

Written in Shikastah. Dated A.H. 1174 = A.D. 1760.

Scribe :—Ghulām Ṣamadānī.

Preface begins thus :—بعد از حمد و سپاس جناب کبریاء احدیت—

Beg. :—

الهي در غم آباد جنونم پادشاهي ده
مرا از ترک دنیا دولت صاحب کلاهي ده

(R. S. Lib.)

172.

دیوان فراقي

Several poets with the Takhallus "*Firāqī*" are mentioned in the *Tazkirah-i-Rūz Rawshan* (تذکرهٔ روز روشن). Written in Shikastah.

Beg. :—

آب زر تازه کرد باغ مـــرا
سبزي نشه زان دماغ مرا

(R. S. Lib.)

173.

دیوان فرقتي

The lyrical poems of Abū Turāb Beg Anjadānī, poetically called "*Furqatī*" (d. A.H. 1026 = A.D. 1616). See, for author's life, *Tazkirah-i-Rūz Rawshan* (تذکرهٔ روز روشن), p 520.

Written in neat Ta‘līq. Dated A.H. 1247 = A.D. 1831.

Beg. :—

دگر زلالهٔ نو رسته کوه فصل بهار
چو مادریست که فرزند پرورد بکنار

(R. S. Lib.)

174.

ديوان فروغي

The lyrical poems of Mīrzā 'Abbās, poetically called "*Farughī*" B. Āqā Mūsā (d. A.H. 1274 = A.D. 1857). The author was one of the court poets of Fatḥ 'Alī Shāh (A.H. 1274-1250). See *Br. Mus. Pers. Cat.*, p. 210*a*. Another poet with the Takhallus "*Farughi*" is mentioned in *Ṣubḥ Gulshan*, p. 315. The *Dīwān* is preceded by a prologue written by Md. Khān who collected the poems.

Written in good Ta'līq. Not dated.

Preface begins thus :— فروغي فروغ گوهر فصاحت الخ

Beg. :—

کی رفتهٔ ز دل که تمنا کنم ترا
کی بودهٔ نهفته که پیدا کنم ترا

(R. S. Lib.)

175.

ديوان فرهنگ

The lyrical poems of "Farhang," probably Farhang Shīrāzī, arranged in alphabetical order. Written in Ta'līq, within red and silver-ruled borders. Not dated.

Beg. :—

مد بسم الله ابروست بچشم بینا
دور بینی که بود عینک دیدار خدا

(R. S. Lib.)

176.

ديوان فياض؟ لاهجي

A valuable copy of the *Dīwān* of Fayyāḍ Lāhjī (d. A.H. 1060 = A.D. 1649) with a preface which begins thus :—

فیاض ازل که بزم هستي آراست
جام سخن از می معاني پیراست

See for details *O.P. Lib. Cat.* (Bānkīpore), Vol. III, No. 313, p. 94, and *Sham'i-Anjuman* (شمع انجمن), p. 374. Written in excellent Ta'līq, within gold-ruled borders. 'Unwān richly illuminated.

Beg. :—

ای بر فراز مسند الا گرفته جا
یک لقمه کرد هر دو جهان را نکام لا

(R. S. Lib.)

177.

قصاید شمس طبسي

The *Qasīdahs* of Qāḍī Shams al-Dīn of Ṭabas (d. A.H. 626 = A.D. 1228). See *Sprenger Cat.* for notice, p. 17; for other copies see *India Office Lib. Cat.* No. 1030. *Pertsch, Berl. Lib. Cat.*, p. 1247, and *Bodl. Lib. Cat.* No. 621. Written in Ta'līq.

Beg. :—

هر آن که سوی عرصهٔ تحقیق راه یافت
در سایهٔ سرادق عزت پناه یافت

(R. S. Lib.)

178.

کلیات احقر

The poetical works of *Aḥqar*, consisting of قصاید, غزلیات, رباعیات, and مخمسات. Regarding the Mukhammasāt which he entitles as *Gulzār Mukhammas* گلزار مخمس the author says in the beginning that their total number is 150 and that he composed them in A.H. 1134 = A.D. 1721.

مخمس شد شمار یک صد و پنج   ز گوهر خانهٔ طبعم بود گنج
چو گلشن هست اشعار مخمس   نهادم نام گلزو مخمس
پی تاریخ این در فکر بودم   سروش هاتفي ناگه شنیدم
بگفت از لطف در گوشم چه نیکو   ز گلزار بهار بیخزان جو

Written in bad Shikastah, slightly defective at the beginning.

Beg. :—

آن قادر کریم خداوند اکبر است
جان و دلم گدای شهنشاه داور است

(R. S. Lib.)

179.

کلیات جمالي

A collection of the lyrical poems of Ḥāmid B. Faḍl-Āllāh, poetically called '*Jamālī*,' of Delhī (d. A.H. 942 = A.D. 1535). See for author and his other works *Br. Mus. Pers. Cat.*, p. 354*a*. Written in Ta'līq.

Beg. :—

حمد سپاس مر ملک مالک ملک
کامل کمال او بري از ملک مشترک

(R. S. Lib.)

180.

كليات جويا

The poetical works of Mīrzā Dārāb Beg of Kashmīr, with the Takhallus '*Jūyā*' (d. A.H. 1118 = A.D. 1706). For notice see *Sprenger Cat.*, p. 453, and for another copy see *O.P. Lib. Cat.* (Bānkīpore), Vol. III, No. 369, p. 178. Written in Ta'līq.

Beg. —
الهي ره نما سوى خود اين گمره غافل را
ز دردت جامهٔ زيب داغ چون طاؤس كن دل را

(R. S. Lib.)

181.

كليات داوري

The lyrical poems of Dāwarī ? Written in very bad Shikastah. Not dated.

Beg. :— شب دوشين كزين نيلي دژ پيروزه گون پيدا
شد اين زرّين ترَنج زعفراني رنگ ما پيدا
تمامي پرّ زاغان گشت پشت تودهٔ اغبر
سراسر چشم شاهي گشت روى گنبد خضرا

(R. S. Lib.)

182.

كليات سعدي

The MS. is of historical interest and is one of the most valuable possessions of this library. It bears on the first fly-leaf some notes in the handwriting of Mun'im Khān[1] B. Bayrām (Beg)[2] (d. A.H. 983 = A.D. 1575) and 'Abd al-Raḥīm Khānkhānān[3] B. Bayrām Khān as follows :—

---

[1] Mun'im Khānkhānān (son of Bayram Beg), a nobleman who was raised to the dignity of prime minister by the Emperor Akbar. He was appointed governor of Jawnpur in A H. 962 = A.D. 1560 after the death of Khānzamān. See for his life *Ma'āthir al-Umarā'*, Vol I, pp. 635-645, *Badā'ūnī*, Vol. II, p. 217, *Darbār Akbarī*, pp. 229-252, and *O.B.D.*, p. 279.

[2] Bayrām Khānkhānān was one of the most distinguished officers of the Mughal court. He died in A.H. 968 = A.D. 1561. See for his life *Badā'ūnī*, Vol. II, pp. 190-192, *Darbār Akbarī*, pp. 157-196, *O.B.D.*, p. 100, and *Ma'āthir al-Umarā'*, pp. 371-384.

[3] For 'Abd al-Raḥīm Khānkhānān, see Blochmann's *Ā'īn-Akbarī*, Vol. I, p. 334, *O.B.D.*, p. 11.

این کلیات حضرت شیخ سعدي را قدس سرہ آنعزیز کوچ [1] بهادر خان در بلدۂ پر سرور جونپور بدبن فقیر فرستادہ بود پانصد روپیه انعام شد - در تاریخ نهصد و هفتاد و شش عدد اوراق این کتاب سیصد و نود و چهار است - عدد ابیات و سطورش از متن و حاشیه نوزدہ هزار و هفتصد ———— حاشیه چهار هزار و هفت صد و بست و هشت است مشتملبر دو وسمه و دیباچۂ مصور و چهار لوح شیرازي - العبد منعم بن بیرم غفر الله ذنوبهما و ستر عیوبهما -

(۲) الله اکبر - در گجرات بعد از فتح سلطان مظفر گجراتي [2] علي مردان خان بهادر [3] گذرانیدند تاریخ نهصد و نود و دو هجري - حررہ عبد الرحیم ابن محمد بیرم از اول تا آخر مطالعه بلکه انتخاب هم نمودم -

First two fly-leaves are adorned with two circles illuminated with gold and floral designs. Foll. 3 and 4 contain hunting seats. The handwriting is an extremely handsome Nasta'līq. Dated A.H. 938 = A.D. 1531.

(R. S. Lib.)

183.

کلیات طالب علي خان

The complete poetical and prose works of Ṭālib 'Alī Khān, poetically called '*Ayshī*', arranged in alphabetical order with an interesting preface, composed at the request of his friend Mīrzā Md. 'Alī in A.H. 1232 = A.D. 1822.

Beg. of preface :— غازۂ رخسار شاهد معاني حمد صورت آفریني

Beg. of *Dīwān* :— ای بوجودت وجود علت امکان ما ......

Written in Indian Ta'līq.

('Abd al-Ḥusayn, Lucknow.)

184.

کلیات علوي

A rare and good copy of the lyrical poems of Ṭāhir al-Ḥusaynī with the poetical title " *Ulvī*."

---

[1] Probably Bahādur Khān Fārūqī ; see *O.B.D.*, p. 94.

[2] Sultān Muẓaffar of Gujrāt (A.H. 917-932 = A.D. 1511-1525).

[3] 'Alī Mardān Khān Bahādur, who served under Akbar and Jahāngīr, from A.H. 984 = A.D. 1576 to his death, distinguished himself especially in the Deccan wars. He died in A.H. 1021 = A.D. 1612. See for details *Ma'āthir al-Umarā'*, Vol. II, pp. 773-775, and Blochmann, *Āīn-Akbarī*, p. 496.

He lived in the Emperor Aurangzib's time and died at Kas͟hmīr. See for details *Sprenger Cat.*, pp. 100, 126 and 327-328, and *O.P. Lib. Cat.* (Bankipore) No. 389, p. 203.

Written in neat Ta'līq, within gold-ruled borders. Not dated.

(Maḥbūb yār Jang Lib., Hyderabad.)

185.

كليات فقيهٔ عمار

A very valuable and complete copy of the poetical works of 'Imād (d. A.H. 773 = A.D. 1371). For author's life and details see *O P. Lib. Cat* (Bānkīpore), Vol. I, No 149, p 218, *Ind. Off. Lib. Cat.* No. 1852, *Sprenger Cat.* p. 436, and for another complete copy see *Bodl. Lib. Cat* No. 803. The title of the work is written in gold within two richly illuminated Circles at the beginning of the copy.

Written in a very elegant Nask͟h within gold-ruled columns. Not dated. The headings are written in gold-and red.

Beg. :—

ای حکمتت زبانرا فصل الخطاب داده
کشت امید جادرا از دیده آب داده

(R. S. Lib.)

186.

كليات قدسي

A very valuable copy of the poetical works of *Qudsī* (d. A.H. 1055 = A.D. 1645). See *O.P. Lib. Cat.* (Bankipore) Vol. III, p. 14. Written by the order of Nawwāb Nit͟hār Md. K͟hān, by the calligraphist Md. A'ẓam in A.H. 1162 = A.D. 1748. Richly illuminated with gold, written in a very beautiful Nasta'līq, within gold-ruled borders. The MS. was purchased by Nawwāb Kalb 'Alī K͟hān from Nawwāb 'Ubayd-Allāh K͟hān Bahādur Fayḍ Jang, C.S.I , *Madār al-Muhām* of Tūnk, in A.H. 1299 = A.D. 1881.

(R. S. Lib.)

187.

كليات مقيم سلمى

The complete poetical works of Muqīm S͟hīrāzī, poetically called '*Salmā*' (سلمى).

The author could not be traced, but from some poems in praise of Dārā S͟hikūh (d. A.H. 1069 = A.D. 1658), 'Abd al-

Raḥīm Khānkhānān (d. A.H. 1036 = A.D. 1616, etc.), it is evident that he flourished at the time in question.

Written in fine neat Shikastah, within three columns.

Beg. :— همّت بفلک میبرد آوازهٔ جم را الخ

(M. 'Alī Ḥusayn Lib., Hyderabad.)

188.

دیوان نظامي

The lyrical poems of "*Niẓāmī*" Ganjavī (d. c. A.H. 602 = A.D 1205). The *Dīwān* consists of *Ghazalyāt*, *Qaṣā'id* and 23 *Rubā'īyāt*. For details see *Sprenger Cat.* From a signature of Mr. H. Blochmann on the fly-leaf it appears that he consulted this copy in A.H. 1286 = A.D. 1869. The work is rare. A copy exists in the Buhār collection, Imp. Lib. The present MS. is full of clerical mistakes.

Written in neat Ta'līq. Not dated.

Beg. :—

هرکه از روی خرد روی بیزدان آرد
لطف یزدان همه تحفهٔ غفران آرد

(R. S. Lib.)

189.

دیوان والي

The poetical works of "*Wālī*." Another poet, namely Najaf Qulī Khān, with the Takhalluṣ "*Wālī*" is mentioned in *Ṣubḥ Gulshan*, p. 585. Written in Shikastah. Not dated.

Beg. :—

خداوندا ز ظلمت صاف گردان سینهٔ ما را
مقابل ساز با حسن قبول آئینهٔ ما را

(R. S. Lib.)

190.

دیوان وامق

The lyrical poems of Nīyāz Muḥyī al-Din Bilgramī, poetically called '*Wāmiq*'. The author was in the court of Shitāb Rāī[1] Rājah (Kāyath) Dīwān of Patnah, who died about A.H. 1187 = A.D. 1777. See *O.B.D.* of Mr. Beale, p. 380. For author's life vide *Nishtar-i-'Ishq* fol. 4766 (of this library).

---

[1] There is a hereditary library in the family of Rajah Shitāb Rāi. (See *Ma'ārif*, an Urdū Journal of A'ẓamgarh, May 1918, Vol. II, p. 13).

Written in Ta'līq. For another copy and details see *O.P. Lib. Cat.*, Vol. III, No. 427.

Contents :—

Qaṣā'id : Beg. :—

گشته در پای قلم رشته ز پایش پیدا
خواست تا کام زند در ره توحید خدا

Ghazalyāt . Beg. :—

چو کند خیال نشـاط خلـوت وصل او دل زار ما
شده خون چکد چو سرشک لخت و دل وجگر بکنار ما

Rubā'īyāt : Beg. :—

ای داده وجود خلق خود را ز عدم
آن کیست که او کند صفات تو رقم

(R. S. Lib.)

191.

دیوان وفائي

The lyrical poems of "*Wafā'ī*" ? Written in fine Ta'līq, within gold-ruled borders. Frontispiece beautifully illuminated. Not dated.

Beg. :—

ای شده ماه رخت نورده محفل ما
روشن از شمع جمال تو چراغ دل ما

(R S. Lib)

192.

دیوان هلالي

A very valuable and fine copy of *Dīwān* of Badr al-Dīn. poetically known as *Hilālī* (d. A.H. 936 = A.D. 1529) See for details *O.P. Lib. Cat.* (Bankipore), Vol. II, No. 228, p. 123, and *Br Mus Pers. Cat.*, p. 656 The MS. bears many seals of the nobles of Shāh Jahān and 'Ālamgīr's time :— - سعد الله چلپی - عالمگیر - عثمان خان - عارف - صادق - عباس - عبد الرشید دیلمی . First two folls. are highly illuminated. Written in excellent Ta'līq, within gold-ruled borders. 'Unwān and margin of first fol. adorned in gold and flowers. Dated A H. 992 = A.D. 1583 (Lith. Lucknow).

Scribe :—Mīr Ḥusayn al-Ḥusaynī.

(R. S. Lib.)

193.

ديوان مجير بيلقاني

A complete *Dīwān* of Mujīr al-Dīn Baylqānī (d. A.H. 594 = A.D. 1197). Dr. Ethe remarks in the *Bodl. Lib. Cat.* No. 559 that it is a " very rare *Dīwān.*" *Br. Mus Lib.* has an incomplete copy. See *Br. Mus. Pers. Cat.* p. 562, and, for notice, see *Sprenger Cat.*, p. 503. There are also two other copies : see Nos. 495 and 407. No. 497 has the following note on the fly-leaf by Mr. H. Blochmann, dated A.D. 1870 : " Exceedingly rare." Written in Ta'līq (undated but old). 'Unwān illuminated, gold-ruled borders. Folls. 4 to 25 are written by another hand on blue paper.

Beg. :—
تا تو از هستی خود خود را نگرداني جدا
هودج جان چون تهي در بارگاه کبريا

Another incomplete copy of the same *Dīwān.*

Beg. :—
مساز حجرهٔ وحدت درین مضیق خراب
که روی صبح سلامت بماند زیر نقاب

Written in fine Ta'līq. First two folls. richly illuminated, with gold and blue colour borders.

Another copy of the same *Dīwān*, defective in both sides.

Beg. :— ابو المظفر ارسلان سلطان حق پرور که خلق ...

Written in Ta'līq.

194.

ديوان (انند رام) مخلص

A very rare, valuable and draft copy of a *Dīwān* by the author Anand Rām *Mukhlis* himself (d. A.H. 1164 = A.D. 1750). The date of composition, A.H. 1150, is expressed in the following *Rubā'ī* :—

شور انداخت بگلزار سخن چهچهه بلبل فکوم مخلص
یافعه ترتیب چو دیوان تاریخ کردم انشا گل فکوم مخلص
١١٥٠

For author's life and his other works see *Br. Mus. Pers. Cat.*, and Elliott, *History of India*. Vol. VIII, p. 76, p. 997*a*.

Contents :—

غزليات Beg. :— الهي آب و رنگ شور بلبل ده بيانم را الخ

رباعيات Beg. :—
فصل گل و جوش ابر سر هست بر آ
مخلص اگرت ذوق طرب هست بر آ

تاریخ Beg. :— چو رکن السلطنت دستور اعظم
گه مي تابد ز تيغش دين پناهي

اشعار ریخته Beg. :— کرینگے فصل گل دھوم آشنای باغبان اپنا
قدیمي صاحب اپنا مشفق اپنا مهربان اپنا

A note on the fly-leaf runs thus :—

ديوان انند رام مخلص خاص مسودهٔ مصنف مير منشي محمد بادشاه غازي استاد ميرزا همايون شاه

The MS. written by the author himself is dated A.H. 1151 = A.D. 1738 :—

بتاریخ نهم شهر رجب المرجب جلوس محمد شاهي روز يکشنبه طرف صبح بخط مصنف باتمام رسيد

For another copy vide *India Office Lib. Catalogue* No. 1707.

'Unwāns first and second folls. are richly adorned with gold. Written in Nīm-S͟hikastah within gold-ruled borders.

(R. S. Lib.)

Mat͟hnavī.

195.

مثنوي اشک و آه

A romantic poem, without author's name. Some folls. at the beginning are damaged. Written in good Ta'līq. This copy was formerly in the library of the Emperor S͟hāh 'Ālam (A.H. 1173-1221 = A.D. 1757-1806). Dated A.H. 1194 = A.D. 1779. Āg͟hā Aḥmad 'Alī[1] does not mention this work in the *Haft Āsmān.* Another copy of the same is in the Niẓām Lib.

Beg. :— الهي تشنه لب خونين زبانم را
بنامت رشک کوثر کن دهانم را

(R. S. Lib.)

196.

بوستان

The *Bustān* of Sa'dī S͟hīrāzī (d. A.H. 690 = A.D. 1291). Written in excellent Nasta'līq, by the famous calligrapher Mīr

---

[1] For Ag͟hā Aḥmad Alī, see my *Pers. Note* (No. 219).

'Alī[1] (d. A.H. 957 = A.D. 1550). For difference of his date of death, see *Br. Mus. Pers. Cat.*, p. 531^b and my *Pers. Note* (No. 233). Dated Harāt, A.H. 927 = A.D. 1520, as mentioned at the end :—

تمت على يد العبد الفقير المذنب على الحسيني الكاتب غفر الله ذنوبه
و ستر عيوبه في اوايل شهر ذي قعده سنة سبع و عشرين وتسعمائة بدار السلطنة
هراة حميت عن الآفات

(R. S. Lib.)

197.

بوستان

Another copy of the *Bustan*, written in fine Nasta'līq, on gold-sprinkled paper with two most sumptuously decorated frontispieces. Written by the famous calligrapher Md. Murād Kashmīrī known as *shīrīn Qalam* of Shāh Jahān's time (A.H. 1037-1069 = A.D. 1628-1659). The MS. is valuable. It bears on the first fly-leaf an autograph of the Emperor Shāh Jahān :—

الحمد لله الذي انزل على عبده الكتاب حرره شاهجهان بن جهانگير شاه
بن اكبر بادشاه غازي -

Humāyūn, Jahāngīr, Shāhjahān, Mun im Khān and 'Abd al-Raḥīm Khānkhānān's autograph will be found in the facsimile of the *O. P. Lib. Cat.* at the end of the 3rd volume.

(Habīb al-Rahmān, Dacca.)

198.

جامع الاسرار

(Wrongly styled مصباح القلوب.) A *Mathnavī* containing thoughts on spiritual life, illustrated by copious anecdotes of Prophets, Saints and Fakīrs, by Rashīd al-Dīn, composed in the time of 'Abd-Allāh Khān in the year A.H. 852 = A.D. 1448 :—

---

[1] Another valuable Persian treatise on Sufic poem without title, dated Harāt A.H. 880 = A.D. 1475. Written by the same calligrapher as appears from the colophon quoted below :—

(تمت على يد العبد الفقير المذنب سلطان علي الكاتب في عشر الاول
من صفر ختم الخير و الظفر سنة ثمانين و ثمانمائه بدار السلطنة هراة)

is in the Arabic and Persian collections belonging to the Hon'ble Mr. W. A. Ironside, President of the Chamber of Commerce.

Notices on the said Arabic and Persian collection will be found in my third instalment (next year).

چون گذشت از هجرتِ خیر الانام   هشتصد و پنجاه و دو شد این تمام

The correct title جامع الاسرار is given in the preface. See fol. 3 :—

یک سحر بودم بفکر این کتاب   اندران اندیشه شد چشمم بخواب
مجمعی دیدم ز خیل اولیا   جمله از نور محبت پر ضیا
در حقیقت طالبانرا دستگیر   هر یکی در کشور معني امیر
رو بایشان کردم از روی نیاز   گفتم ای قوم برحمت سرفراز
همتی ورزید اندر کار من   تا بیاید رونقی بازار من
گردد این نسخه بعالم دلپذیر   درمیان خلق چون بدر منیر
نام این بنهند تا دانند چیست   این دُر ناسفته از گفتار کیست
در زمان آن جمله از راه کرم   جامع الاسرار کردندش رقم

Written in Ta'līq. Dated A.H. 1064 = A.D. 1653.
Scribe :—Pīr Md.

Beg. :—

ابتدا کردم ز نامت نامه را   در شکر گیرم زبان خامه را
در رهت هم شب سحرخیزي کنم   از نی خامه شکر ریزي کنم

(R. S Lib.)

199.

مثنوي جلوهٔ ناز

A *Mathnavī* in praise of Akbarābād, Kashmīr and other important cities of India, by Ẓafar Khān, poetically called "*Aḥsan*" (d. A.H. 1037 = A.D. 1627). The title of the poem and the author's name are given in the following lines on fol. 13b :—

میان اهل معنی خاص گشتم   ببحر مثنوي غواص گشتم
نمودم جمع احسن گوهری چند   غلط گفتم درخشان اختری چند
ازان نامش نهادم جلوهٔ ناز   که کردهٔ دفتر حسن بتان باز

For author see *Br. Mus. Pers. Cat.*, pp. 687, 807. 'Unwāns ruled on gold-sprinkled paper. Written in excellent Ta'līq.

Preface :— حمد بیحد و سپاس بیعد مر حضرت واهب الصور و نگارندهٔ الخ

Beg. :—

بنام آنکه گل هم بلبل اوست
به بستان لاله سرخوش از مل اوست

(R. S. Lib.)

200.

مثنوي حسن و دل

A *Mathnavī*, by Md. Yaḥyā, poetically called "*Fattāhī*" of Nīshāpūr, who died according to *Br. Mus. Pers. Cat.* in A.H. 852 = A.D. 1448 and according to *Nishtār-i-'Ishq* in A.H. 853. The MS. contains two excellent miniatures of the best Pers style to be found on folls. 13^b and 14^a. Written in good Nasta'līq. Dated A.H. 909 = A.D. 1503. Folls. 1^b, 2^a and 14^b are richly illuminated. The preface begins thus :—

چنین گوید مخترع این حکایت و متبع این روایت الخ .

Beg. :—

بنام آنک دلها را در آغاز
بنام اوست حسن مطلع راز

(R. S. Lib.)

201.

روضة الانوار

An old and valuable copy of the Ṣūfic poem of Kamāl al-Dīn Abu l 'Atā Maḥmūd B 'Alī, poetically surnamed "*Khwhājū*" of Kirmān (d A.H. 742 = A.D. 1341). Written by Sayyid 'Alī al-Kātib probably Mir 'Alī al-Kātib (see *Br. Mus. Pers Cat.*, p. 531), who wrote it for Kamāl al-Dīn Maḥmūd B. Jalāl ad-Dīn Jawrqānī in A.H. 975 = A.D. 1567.

تمت الكتاب ... سيد على الكاتب في تاريخ سلخ شهر ذيقعده سنة ٩٧٥
هجري [١٥٦٧ع] بجهة كمال الدين محمود بن جلال الدين جورقاني .

Written within gold-ruled borders. 'Unwān illuminated. Dated A.H. 975 = A.D. 1567. For author and other copies see *Br. Mus. Pers. Cat.*, p. 621, and *Sprenger Cat.*, p. 472.

(R. S. Lib.)

202.

مثنوي ذكر العيش

A very valuable copy of the rare romantic poem by آسي (*Āsī* ?). The name of the author appears thus on fol. 12 :—

آسي زرخ و لبش چو بلبل   بر بوی گل و گلاب شد مست

It was composed in A.H. 832 = A.D. 1428, according to the chronogram on the last fol. of the MS. :—

در هشتصد و سي و دو ز هجرت   اين درج كشاد گنج فكرت

The total number of verses is 4,620 :—

پرسید چوکَست شمار او چیست　　گو چار هزار ششصد و بیست
در سلخ ربیع آخر ابن ماه　　این فکـــر دراز گشت کوتاه

The MS. contains nine beautiful pictures of Persian style. ‘Unwān illuminated, gold-ruled borders. Written in excellent Ta‘līq in Persian hand. The MS. is undated but old.

Beg. :—
ای نام تو فتح گنج مقصود
نکشـــادة در خـزاین جود

(R. S. Lib.)

203.

مثنوي سادة پرکار

A *Mathnavī*, by Md. Murād, with the Takhallus "*Lā'iq*" as he says in the *Khātimah* :—

راقم این نامهٔ معنـــي سواد　　محو سخن بنـدة محمد مراد

Written in Shikastah. Shāhjahānābād. Modern.

Beg. :—

بســـم الله الرحمن الرحیـــم　　مصـــرع موزون کتـــاب کریم

(R. S. Lib.)

204.

سبع المعاني

A rare copy of seven *Mathnavīs* in imitation of Jāmī's *Haft Awrang*, by Yūsuf ‘Alī B. Muḥammad al-Ḥusaynī al-jurjānī who flourished in the time of Shāh ‘Abbās I of Persia (A.H. 996-1038 = A.D. 1587-1628). These poems are dedicated to him as stated in the prologue′ fol. 3^a :—

چون ابر بیان درین هفت دریا گوهر معاني بارانند من حیث التناسب آنرا بسبع المعاني موسوم گردانید - چون تالیف سبعه فارغ گردیدم مزین و مزینش گردانیدم بنام نامي و اسم سامي حضرت شاه عالم پناه .. سلطان شاه عباس بهادر خان الخ -

The author enumerates in the preface his seven poems with their metres in the following order :—

(1) ذکر العیش consisting of 5,090 verses.
(2) سادة پرکار consisting of 2,500 verses.

(3) قبلة الاخيار consisting of 3,446 verses.
(4) صورت و معني consisting of 1,270 verses.
(5) مطالب consisting of 5,032 verses.
(6) ظفر نامهٔ حيدري consisting of 8,665 verses.
(7) يوسف زليخا consisting of 4,650 verses.

The following five *Mathnavis* of this author in a separate volume are preserved in this library :—

ذکر العیش

On ethics, etc., with eulogies on the Emperor Akbar (963-1014 = A.D. 1556-1605) in the metre of the *Haft Paykar*. The preface of the work contains three pages. Wanting fol. 1.

Beg. :—

ای عیش بجز ذکر تو بر خلق حرام   وز ذکر تو عشاق تو در عشق مدام

سادة پرکار

On mysticism, etc., in the metre of the *Makhzan al-Asrār* of Niẓāmī and *Manṭiq al-Ṭayr* of Farīd al-Dīn ʻ*Aṭṭār*, with a long preface beginning thus :—

ای روی چو ماه از تو دلداران را   خال از تو ابروی سادة رخساران را

The poem begins thus :—

بسم الله الرحمن الرحیم   صیقل آئینهٔ طبع سلیم

The above work was composed in A.H. 990 = A.D. 1582 as the chronogram at the end shows :—

گر نهي اندر رہ تاریخ روی   معنی تاریخ وی از نظم جوی
۹۹۰=۱۵۸۲

قبلة الاخبار

On morals and mysticism, etc., in the metre of *Subḥat al-Abrār* of "*Jāmī*" with a short preface beginning :—

توفیق بعالم نظر انداخته است   خورشید بحال ذره پرداخته است

The *Mathnavī* begins thus :—

بسم الله الرحمن الرحیم   منجی المؤمن من نار جحیم

The author composed the above work in A.H. 1003 = A.D. 1594 as the chronogram on fol. 46ᵃ shows :—

گر درین باغ نشیني بطرب   سال تاریخ هم از باغ طلب

صورت و معني

On love in the metre of Jāmī's *Lailā* and *Majnūn*. Composed in A.H. 1004 = A.D. 1695 as the chronogram on fol. 15^{b} shows :—

Beg. :—

گر تاریخش را شوي طلبگار   از دری معرفت طلب دار
۱۰۰۴
ای صورت و معني از تو پیدا   از فیض تو عقل معني آرا

یوسف زلیخا

In the metre of Jāmī's *Yusuf Zulaykhā*, composed in A.H. 1011 = A.D. 1602 as the chronogram at the end shows :—

Beg. :—

اگر تاریخ را باشي طلبگار   ریاض و روضه را هم در نظر آر
۱۰۱۱-۱۰۱۱
خداوندا بخویشم راه بنمای   زبانم را ببسم الله بکشای

Written in fine Ta'līq. Headings are written with rubrications.

(R. S. Lib.)

205.

شیرین خسرو

A very valuable copy of the *Shīrīn Khusraw* of the celebrated *Niẓāmī* (d. c. A.H. 600 = A.D. 1203). Written in excellent Ta'līq, within four columns and ruled borders, and adorned with beautifully designed full-page decorations on fols. I^{b} and II^{a}. Dated A.H. 983 = A.D. 1575.

Scribe :—Maḥmūd Zāhīdī.

Beg. :— خداوندا در توفیق بکشای الخ

(R. S. Lib.)

206.

شیرین خسرو

Another extremely valuable copy of the same work, containing seven pictures in excellent Persian style. Written in fine Ta'līq on gold-sprinkled paper, margins are adorned with gold flowers, headings are written in gold within blue coloured flowers. Dated A.H. 984 = A.D. 1576.

(R. S. Lib.)

207.

شیرین خسرو

Another *Mathnavī* entitled *Shīrīn Khusrau* by Nawwāb Āṣaf Khān Ja'far, whose original name was Mīrzā Qiwām al-Dīn Md. He died in the reign of the Emperor Jahāngīr (d. A.H. 1037 = A.D. 1627). Dr. Sprenger has wrongly calculated the date of his death containing the chronogram صد حیف از آصف خان A.H. 1212 = A.D 1797. The correct calculation is A.H 1022 = A.D. 1613. See *Sprenger Cat.*, p. 120 See a full account of his career in Blochmann's *Ā'īn-ī-Akbarī*, Vol. 1, p 411, *Ma'āthir al-Umarā'*, *Tazkirat al-Umarā'*, Elliott, *Bibliographical Index* pp. 143-162, and Elliott, *History of India*, Vol V, pp. 150-176, *Br. Mus. Pers. Cat.*, p. 118^b, *Sprenger Cat.*, p. 110, and *Bodl. Lib. Cat.*, No. 1068. For other copies see *Bodl. Lib. Cat*, Nos. 1069-1071.

The work was written by the order of Mīrzā Ḥasan Beg Bakhshī of Gujrāt as mentioned at the end :—

تمت بحسن توفیقه کتاب خسروی شیرین آصفخان بحسب فرموده
بخشي الملکي میرزا حسن بیگ بخشي گجرات ۔

In a note on the first fly-leaf the title of the MS. is given "*Shīrīn Khusraw-i-Āṣafī*" (شیرین خسرو آصفی).

Written in fine minute Ta'līq on gold-sprinkled paper within gold-ruled borders and columns. First two folls. are richly illuminated. Dated A.H. 1001 = A.D. 1592.

Scribe :—Fatḥ Md. B. Mullā Ṣāḥib Kātib.

Beg :—

خداوندا رهی از غیب بنمـــای　　ز غیبم چشم دل ز عیب بگشای

(R. S. Lib.)

208.

شیرین فرهاد

A *Mathnavī* by Ghinā'ī. Composed according to the chronogram at the end in A.H. 1021 = A.D. 1612 :—

برآمد این یقین از پردهٔ شک　　بتـــاریخ هزار و بست و یک

Written in excellent Ta'līq, within gold-ruled borders on gold-sprinkled papers. Contains 8 miniatures of Persian style. Many folls. are injured. Not dated.

Beg. :—

بدام صورت آرای معانی
چراغ افروز بزم زندگانی

(R. S. Lib.)

209.

مثنوي علي اكبر شيرازي

The author ‘Alī Akbar Shīrāzī wrote this *Mathnavī* in praise of Lucknow, the river Gūmtī, etc. :—

لكهنو آن غيرت جنات خلد ‌ ‌ ‌ هذد ازو يافته جنات خلد الخ

composed in the time of Amjad ‘Alī Shāh,[1] king of Oudh (A.H. 1258-1263 = A.D. 1842-1846).

Written in clear Ta‘līq. Modern copy.

(R. S. Lib.)

210.

مثنوي در طوي فرخسير

A famous and an autograph *Mathnavī* on the marriage of the Emperor Farrukh Siyar (A.H. 1124-1131 = A.D. 1712-1718).

---

[1] Amjad ‘Alī Shāh was the son of Md. ‘Alī Shāh, whom he succeeded on the throne of Lucknow as king of Oudh, with the title of “*Thurayyā jāh* on the 5th Rabī‘ II, A.H. 1268, 17th May, A.D. 1842, and died on the 26th Ṣafar, A.H 1263, 16th March, A.D. 1847. He was succeeded by his son Wājid Alī Shāh (see *O.B.D.*, p. 73)

Md. ‘Alī Shāh, son of Amjad ‘Alī Shāh, built an observatory at a cost of 4,00,000 rupees, and there was a big magnificent library attached to it. The library was transferred to the palace of Nawwāb Alī Naqī Khān (d. A.H .1278 = A.D. 1871), who was the father-in-law and prime minister of Wājid ‘Alī Shāh, poetically called “*Akhtar*,” the last king of Oudh, after the deposition of Wājid ‘Alī Shāh. (See *Alīgarh Institute Gazette*, 30th May, 1917.)

The above library contained an extensive collection of books and MSS., but on the deposition of the last king the contents of the library were so completely dispersed that there is hardly a single library or depository in India in which a volume formerly belonging to the library in question cannot now be found. The following account of the library of Oudh and its contents has been given by Dr. Sprenger in the preface of his *Oudh Catalogue*: (1) Mūtī Mahall Palace library, 3,000 vols.; (2)Farḥ Bakhsh Palace library (in which the late king used to reside), 1,000 vols.; (3) Topkhānah library; volumes deposited in 40 dilapidated boxes.

For fuller details see my Urdū articles, published in the *Aligarh Institute Gazette*, 23rd May, 1917, and *Report of the Researches into the Muhummadan libraries* of Lucknow by Dr. Sprenger, 1848 A.D.

The seal of the library of Wājid ‘Alī Shāh contains the following Persian couplet :—

خاتم واجد علي سلطان عالم بركتاب ‌ ‌ ‌ دابت و پر نور بادا تا فروغ آفتاب

(See *Catalogue of the Ar. and Pers. MSS. in the Calcutta Madrasah Library*, p. 99, and *O. P. Lib. Cat.*, Vol. II, No. 236, p 144.)

Author :—Mīr 'Abd al-Jalīl Bilgrāmī (d. A.H. 1138 = A.D. 1725). For his life and works see *Khizānah-i-'Āmirah*, pp. 352-361. The work was copied in the year when the author died. Mīr Āzād Bilgrāmī's (d. A.H. 1200 = A.D. 1805) handwriting are in some places in the MS. For his another autograph see my *Arabic Note* (No. 152) in the *J.A.S.B.*, Vol. XIII, 1917. Written in Ta'liq and Shikastaḥ. Dated A.H. 1138 = A.D. 1725.

Beg. :— شهنشاه سریر سرفرازي الخ

(M. 'Alī Ḥusayn Lib., Hyderabad.)

211.

منطق الرياحين

A rare and valuable copy of a romantic poem by " *Āsī* "(?) Composed in A.H. 830 = A.D. 1426 after a labour of six months as he says on fol. 63^b:—

سال تاریخ هشتصد و سي بود   کین بنای خجسته شد موجود
قرب شش ماه کوشش سحري   گشت این درج برز درّ دري
این همه برگ گل درین گلزار   شش صد و شش هزار شد بشمار

Total verses 6,600.

The MS. contains also 11 pictures. The illuminations, etc., of this copy seem to be by the same hand as in the preceding copies of the same author.

Beg. :—
ای خداوند آسمان و زمیـــن
نه تو بیجـــا نه جای تو تعیین

(R. S. Lib.)

212.

مهر و مشتري

A valuable copy of a romantic *Mathnavī*.

Author :—Shams al-Dīn Md. " *Aṣṣār* " of Tabrīz (d. A.H. 784 = A.D. 1382). See for details *O.P. Library Cat.* (Bankīpore), Vol. I, p. 225, No. 148, *Br Mus. Pers. Cat.*, p. 626^b, *Ind. Office Lib. Cat.*, No. 1244, *Pertsch, Berl. Lib. Cat.*, pp. 843-845 and 1066, *Bodl. Lib. Cat.*, Nos. 811-814, *Sprenger Cat.*, p. 311, *Cambridge University Cat.*, p. 345, Dr. Ross and Prof. Browne *Cat.*, p. 31, and *A.S B. Lib. Cat.*, p. 100.

A Turkish translation of this poem is noticed in the *Paris Lib. Cat.*, No. 313. Written in good Ta'līq, illuminated with gold. Dated A.H. 937 = A.D. 1530.

('Alī Ḥusayn Lib., Hyderabad.)

213.

مهر و مشتري

Another valuable copy of the same work.

The MS. contains seven beautiful miniatures. Written in excellent Ta'līq, within gold-ruled borders and columns. Undated but old.

Scribe :—Muḥammad Qiwām Shīrāzī.

Beg. :— بنام پادشاه عالم عشق الخ

(R. S. Lib.)

214.

مثنوي نافجي

A very valuable, unique and autograph *Mathnavī* with a preface, by Qāsim B. Ḥusayn B. Ḥaydar al-Isfahānī al-Nāfijī, composed in A.H. 901 = A.D. 1486.

It appears from the *Khātimah* that the MS. was written and collated by the author himself as he says :—

قابل القايل الفقير الى اللّٰه قاسم بن حسين بن حيدر الاصفهاني
ثم النافجي ما كان مكتوبا منه فاتمه بخط في شهر شعبان سنه ۹۰۱ هجري

Āghā Aḥmad 'Alī does not mention this *Mathnavī* in his *Haft Āsmān*. Written in minute and neat Persian hand. Dated A.H. 910 = A D. 1495.

Beginning of the preface :— نسيم بهار لطف و صفا - الخ

,, ,, *Mathnavī* :— اى از تو نسيم عشق در شور

(M. 'Alī Ḥusayn Lib., Hyderabad.)

215.

مثنوي ناظر و منظور

A rare *Mathnavī* relating a story of love among *Nāẓir* and *Manẓūr* (ناظر و منظور) by the same author " *Āsī*."

The author composed this work in A.H. 830 = A.D. 1426, after a labour of two months. See fol. 53^b.—

قرب دو ماهم بسحرهای شام   گشت تمام این بت شیرین کلام
ماه محرم بدو شور محشور   در سحر آدینه کرد این ظهور
گردش گردون که خوش احوال بود   هشتصد وسي ز کهن سال بود

Total number of verses are 3,020 :—

یک بیکش بیت که کردم شمار   ست فزون آمد ازین سه هزار
نام که درسلک کتاب آمدش   ناظر و منظور خطاب آمدش

The MS. contains also ten beautiful pictures. Another *Mat͟hnavī* of the same title "*Nāẓir and Manẓūr*" composed by "*Waḥs͟hī*" (d. A.H. 1012 = A.D. 1603) is described in *Bodl. Lib. Cat.*, p. 391, and *Sprenger Cat*, p. 586.

Beg. :—
مطلع این مایهٔ فرخنده فال
هست بنام احد ذو الجلال

This copy contains two other romantic poems, composed by the same author in A.H. 828 = A.D. 1424 and consisting of 2,900 verses. Contains ten and seven pictures. The illuminations and paintings of the above copies seem to be in the same hand as in the preceding one.

Beg. :—
خداوندا بتوفیق عنایت
دلم را بخش انوار هدایت

Beg. :—
توئي پاک دامن چوگل درچمن
رخ لاله و عارض چون سمن

The last copy is incomplete at the end.

(R. S. Lib.)

216.

وامق و عذرا

"*Wāmīq* and '*Azrā*," a love story, by S͟hayk͟h '*Ṣarfī*,' composed in A.H. 993 = A.D. 1584. See the chronogram representing the composition and the author's name in the following *Bayt* :—

بچشم شیخ صرفي دید لایق   که تاریخش بود معشوق و عاشق

The MS. contains eight good pictures. Written in clear Ta'līq. Dated Lahore A.H. 1290 = A.D. 1873. First two folls. are richly illuminated with gold.

Beg. :—
خداوندا حجاب از پیش بگشا
بمشتاقان جمال خویش بنما

(R. S. Lib.)

217.

وامق و عذرا

Another copy of the same title, by '*Ṣulḥī*' (?), as appears from fol.. 2^b^:—

بیا صلحي بتوفيق خداوند   چو خامه برمیان جان کمر بند

Composed in the time of the Emperor Akbar (A.H. 963-1014 = A.D. 1556-1605). Written in Ta'līq. Dated A.H. 1072 = A.D. 1661, by the request of one Nūr Md.

Beg. :— خداوندا دری از وصل بکشای
ز فرعم ره بسوی اصل بنمای

(R. S. Lib.)

218.

وامق و عذرا

Another copy of the same, by *Qatīlī* of Bukhārā, who was in the Court of the Sultān 'Abd al-'Azīz Khān Uzbak of Bukhārā (son of Sulṭān 'Ubayd-Allāh of Uzbak Khāqāns, A.H. 939-946 = A.D. 1532-1539). See for author's life *Nishtar-ī-'Ishq*, fol. 547^b^ (of this Lib.). The name of the author is mentioned on fol. 256^b^ in the MS :—

زان غرقهٔ فیض جبرئیلي   خوش کن بني دل قتیلي

The MS. contains 52 miniatures of excellent style. Written in clear Ta'līq, gold-ruled borders. Frontispiece richy illuminated and the first two pages are interlined with gold. Undated.

Beg. :— ای نام خوش تو درد دلها است
دریاد توهست هرچه پیدا است

(R. S. Lib.)

219.

مثنوي هفت جوهر

A *Mathnavī* on Bahrām Gūr, by '*Abjadī*' (d. A.H. 1193 = A.D. 1779). For author and his another work see my *Pers. Note* on *Dīwān Abjadī* (No. 107).

Āghā Aḥmad 'Alī does not refer to this work in his *Haft Āsmān* in which he mentions other 78 *Mathnavīs*. Āghā Aḥmad 'Alī died at Dacca in A.H. 1290 = A.D. 1873. See

Biographical notice of *Haft Āsmān* written by Mr. Blochmann (Bib. Ind.).

Written in Ta'līq. Not dated.

Beg. :— ای جهان داور فریب نواز

(Sh. 'U. 'Ubayd-Allāh Lib., Madras.)

220.

هفت اورنگ

An extremely valuable copy of the famous seven *Mathnawīs* of *Jāmī* (d. A.H. 898 = A.D. 1492) with a prose preface. Written in fair Ta'līq, in four gold-ruled columns, with a richly illuminated 'Unwān at the beginning of each poem. The headings are written in Naskh, with gold. The MS. contains nineteen (19) miniatures of excellent Persian style. Dated A.H. 1038 = A.D. 1628. For details see *Br. Mus. Pers. Cat.*, p. 644b.

Scribe :—Jamāl al-Dīn Khatīb al-Shīrāzī.

Nawwāb Kalb 'Alī Khān purchased this MS. for Rs. 100 in A.H 1298 = A.D. 1873, as written by him on the fly-leaf of the MS. :—

الحمد لله که نسخهٔ متبرکه هذا مسمی بهفت اورنگ جامي بقیمت
یک صد روپیه خرید گردیده داخل کتب خانه گردید - حرره محمد کلب علي
خان عفي عنه - بتاریخ بست و سوم ذي حجه سنه ۱۲۹۰ هجري مقدسه

(R. S. Lib.)

221.

یوسف زلیخا

A very valuable copy of *Yūsuf Zulaykhā*, by '*Jāmī*' (d. A.H. 898 = A.D. 1492), contains seven pictures of excellent style in full page, and marginal pictures are richly adorned with gold and flowers. First and last 4 folls. are also highly illuminated with gold, etc. (No date.) For details see *Br. Mus. Pers. Cat.*, p. 645a.

(R. S. Lib.)

222.

یوسف زلیخا بزبان پشتو

A Pushto version of the well-known Qur'ānic story *Yūsuf-Zulaykhā*, by 'Abd al-Qādir ? See *Ind. Off. Lib. Cat.*, No. 1356.

Written in good Naskh. Dated 1229 A.H. = A.D. 1813.

Beg. :— عنایت ربّ بما کریما
و امید غنچهٔ مَ واکرے

(Maḥbūb Yar Jang Lib., Hyderabad.)

223.

خمسهٔ جامي

An extremely valuable copy of *Jāmi's Khamsah* خمسهٔ جامي, contains nine excellent miniatures of Persian style. 'Unwans illuminated. Written in four gold-ruled columns. For details see *Bodl. Lib. Cat.* No. 900 and *Br. Mus. Pers. Cat.*, p. 645. Excellent binding. Dated Bākharz A.H. 977 = A.D. 1569.

Scribe :—Md. B. 'Alā al-Dīn. Good Ta'līq.

(R. S. Lib.)

224.

خمسهٔ نظامي

A very valuable copy of *Khamsah-i-Niẓāmī*. Fine 'Unwans and margin richly illuminated. Written in minute neat Ta'līq, within gold-ruled columns and borders. Dated A.H. 1021 = A.D. 1612. For details see *Br. Mus Pers. Cat.*, p. 564ᵃ.

Scribe :—M. B. Ḥājī M. Khaljān Shīrāzī.

(R. S. Lib.)

225.

گرشاسپ نامه

The history of Garshāsp, the hero of Sīstān. Written in imitation of the *Shāhnāmah* of *Firdawsī*, by '*Asadī* (d. A.H. 458 = A.D. 1065). See *Br. Müs. Suppl. Pers. Cat.*, p. 134, No. 201. Written in elegant Nasta'līq. 'Unwān highly illuminated. Not dated, but old and valuable copy.

Beg. :— سپاس از خدا ایزد رهنمای

('Alī Ḥusayn Lib., Hyderabad.)

226.

مفتاح الاکبر

A Persian translation of the well-known work of *Sanghāsan Battīsī* (سنگهاسن بتیسي). A series of 32 tales about Rājah Bikramājīt, king of Mālwah.

Translator:—Sayyid Muẓaffar B. Sayyid Hāshim al-Ḥusaynī al-Hūpyānī ? It is stated in the prologue that the work had been translated from the Hindī original to Persian by the order of the Emperor Akbar (A H. 963-1014 = 1556-1605 A.D.). For details see *Br. Mus. Pers. Cat.*, p 763a.

Written in Ta'līq. Dated A H 1212 = A.D. 1797.

Beg. :— سزاوار حمد بیقیاس پادشاهی است که وجود اعیان را از مخزن غیب الخ

(R. S. Lib.)

XII.

SCIENCES.

227

رساله در تحقیق نفس ناطقه

A treatise on metaphysics without author's name, composed in the year A.H. 1062 = A.D. 1651, as mentioned in the preface :—

چون در عنفوان شباب که بمطالعه بعضی از رسائل حکمیه در شهور
سنه ۱۰۶۲ هجری ۱۶۵۱ع در صحبت استادی ...... مولانا السید لسند اشتغال
داشت - سوال چند که از ۳ خلجات خاطر بود درین اوراق مسطور گردانید *

The work is dedicated to a prince Salīm-Allāh سلیم لله (some letters are omitted before his name) :—

این رسالهٔ شریفه که از آثار انفاس نفیسه شاهزادهٔ والا گهر قدسي القاب
مهر شعاع ... سلیم الله ظلال جلاله علی مفارق العالمین الی یوم الدین الخ

Scribe :—'Abd al-'Alī B. Pīr 'Alī al-Haravī (?).

Written in a very clear and good Nasta'līq, within gold-ruled borders, and marginal notes are in Shikastah. 'Unwāns are illuminated. Valuable copy.

Beg. :— صدر دیباچهٔ دانش و آغاز صحیفهٔ بینش الخ

('Abd al-Ḥusayn, Lucknow.)

228.

رساله في بيان كيفيت سريان نور

A valuable treatise on Philosophy by Ṣadr al-Dīn Md. B. Ibrāhīm Shīrazī called *Mullā Ṣadrā*[1] (a pupil of Mīr Bāqir

---

[1] For *Mullā Ṣadrā's* life and his works see *Br. Mus. Pers. Cat.* p. 829a, Gobineau, *Religions de l'Asie*, p. 84, *Brock.*, Vol II, p. 413, *Cairo*

Dāmād and author of *al-Asfār al-Arba'h*) (d. A.H. 1050 = A.D. 1640).

Beg. :— احمدک یا من تجلیت الخ

Written in a fine Nasta'līq, by author's son.

(M. 'Abd al-Bāsiṭ Lib., Hyderabad.)

229.

الدرة الثمینة

A valuable treatise on Philosophy by the same author.

Beg. :— سپاس بی انتہا و ثنای بیرون الخ

Written in a fine Nasta'līq, by author's son.

(M. 'Abd al Bāsit Lib., Hyderabad.)

XIII.

MECHANICS.

230.

کلید دانش

A very curious work on mechanical contrivances for purposes of utility or amusements. The work is divided into many sections and figures, treating of the following subjects :—hour glasses, dials and other instruments for the measurements of time ; magical cups and other devices connected with wine drinking ; fountain pumps and other contrivances for raising water, etc. Each figure is illustrated and all headings of the section and figures are written in red ink. Preface which is written by a later author does not throw any light upon the real author of this work but from the colophon it appears that the work was composed by Fath-Allāh[1] Shīrāzī (d. A.H. 997 = A.D. 1588) of the Emperor Akbar's time under the title of کلید دانش. Several folls. are missing.

Scribe :—Ḥamīd al-Dīn B. Jamāḷ al-Dīn of Iṣfahān. Written in a clear Naskh and Ta'līq. Dated A.H. 993 = A.D. 1584.

Lib Cat. Vol. VI, p. 88, and *Catalogue of the Arabic books in the Br. Mus.*, Vol. II, pp. 192-194.

[1] For Fath-Allāh's life see *Darbār Akbarī*, pp. 673-684. *Badā'ūnī* Vol. II, p. 369, Vol. III, p. 154, Blochmann, *Ā'īn Akbarī*, p. 33, and *Ma'āthir al Umarā'*.

Beg. :— الحمد لله ... اما بعد ددانکه الخ

End :— تمت الکتاب کایه دانش (مصنفه ملا شاه فتح الله شیرازي المخاطب بعز الدوله [بعضد الدوله] بدرجهٔ اکمل مقبول بارگاه محمد اکبر بودند) که آن بر جر اثقال و نیزگلهای عجائب مفخر بودند ۔

The work begins from 9th figure (شکل نهم).

In 1918 I saw the same copy in the possession of a man of Bhopāl who came to Calcutta with this copy.

(Jagat Narā'in & Co., Cawnpore chowk.)

231.

معیار العقول

A tract on mechanical contrivances for purposes of utility or amusements by Abū ‘Alī (?).

The work is divided into five chapters. Written in Ta‘līq. For other copies see *Cat.* of Dr. Ross and Mr. Browne, p. 10, and *Govt. Ind. Coll.*, *A.S.B.*, part I, p. 53, No. 959.

Beg. :— الحمد لله الذي رفع مقادیر اهل الکمال ... الخ

(Khalīl al-Dīn Aḥmad Lib., Benares.)

XIV.

PHYSIOGNOMY.

232.

رساله در علم فراست

A tract on Physiognomy. The author's name does not appear in the MS. but we learn from the *Bodl. Lib. Cat.*, No. 1880, that the author of this work is Nūr Bakhsh. Written in Nasta‘līq. Undated.

Beg. :— حمد و سپاس و ثنای بیقیاس حضرت حکیمی را الخ

(‘Abd al-Husayn, Lucknow.)

XV.

CALLIGRAPHY.

A very useful and interesting collection of treatises on calligrapy, as following :—

233.

رسم الخط

A treatise, in verse, on the rules of Persian penmanship in six characters, by '*Majnūn*,' better known as Mīr 'Alī al-Kātib, who died, according to the *Mir'at al-'Ālam*, A.H. 924 = A.D. 1518, and according to the other authors A.H. 951 = A.D. 1544 and A.H. 957 = A.D. 1550.

See for details and another copy *Br. Mus. Pers. Cat.* p. 531. and my *Pers. Note* (No. 196). Written in Ta'līq. Not dated.

Beg. :— ای خامهٔ انشای رقم کن ...

234.

رساله خطاطی

Another treatise on calligraphy dealing with various forms of writing, viz. Thulth ثلث, Tawqī' توقيع, Naskh نسخ and Nasta'līq نستعليق by Fath-Allāh who is probably identical with the author of *Ākhlāq Ẓahīrīyah* اخلاق ظهيرية. Vide *Br. Mus. Pers. Cat.*, p. 865^a.

Written in Naskh, not dated.

(Mahbūb Yārjung Lib., Hyderabad.)

235.

(رساله) عبد اللّٰه الصيرفي

A treatise on the rules of formation of alphabets by the famous calligrapher Abd-Allāh Ṣayrafī. It is divided into a *Muqaddamah*, two chapters and a ***Khātimah***. Written in Ta'līq. Not dated.

Beg. :— اما بعد چنين گويد مقرر اين كتاب عبد الله الصيرفي الخ

236.

A treatise in verse on the rules of writing the Naskh character by Murād of Kashmīr, better known as "*Begam*," composed at the request of Hājī Md. 'Urf Dār. The author was a pupil of Md. Ḥusayn. Written in fine Ta'līq.

Beg. :— بعد حمـــد ايزد و نعت رسول
گوش بر قولم كن از سمع قبـول

(M. Md. Muḥaddith Lib., Rampore.)

XVI.

AGRICULTURE.

237.

ارشاد الزراعت

A work on agriculture treating chiefly of the culture of fruits, trees, flowers, vegetables and grains as practised in India, composed in A.H. 921 = A.D. 1515.

Author :—Qāsīm Yūsuf Abū Nasrī Ansārī, poetically called "*Qāniʻī.*" The colophon states that the transcriber of the MS. is Khwājah Kalān Kātib and that the date of transcription is A.H. 986 = A.D. 1578 :—

قد وقع الفراغ من تسوید هذه النسخة الشریفة في علم الحراثة بدار السلطنة هراة في تاریخ شهر صفر سنه ۹۸۶ هجري [۱۵۷۸ م] ست و ثمانین و تسعمائة علی ید الضعیف خواجه کلان کاتب في ولایت خواف بقصبة سلومة غفر ذنوبه و ستر عیوبه مني یا رب العالمین -

For another copy see *A.S.B.*[1] *Govt. Coll.*, part. I, p. 3, No. 30 (in 3 parts) where the name of the author is not given.

Written in minute and clear Taʻliq.

Beg. :— حمد مر قادري را که در عرصهٔ چهار باغ الخ

(Nizām Lib., Hyderabad.)

XVII.

ETHICS.

238.

ساز و پیرایهٔ شاهان

A treatise on ethics by the famous *Rubāʻī* writer, Afḍal al-Dīn Kāshī[2] (d. A.H. 707 = A.D. 1307) For another copy see

---

[1] *A.S.B. Lib.* A beautiful copy which was formerly in the Emperor ʻĀlamgīr's library as appears from his seal on the 1st fol. ʻĀlamgīr had a big library. He acquired a library belonging to ʻĀdil Shāh of Bijāpore. All the most valuable MSS. were, it is said. taken away by him in cart-loads. Aurangzīb's love of theology led him to collect Tafsīrs, Ḥadīth, Fiqh, etc. The collection in his library was thus augmented. (See *Mir'at al-ʻĀlam*, MS. copy Buhār collection, leaf 258). He made several provisions for the good management of his library. (See *Bodl. Lib. Cat.* No. 829).

ʻAbd-Allāh Chalpī, Qābil Khān, Mubārak rū, Mīr Sayyid ʻAlī Khān, Jawāhir Raqam, Hidāyat-Allāh *Zarrīn Raqam*, Dilāwr ʻAlī, Multafit Khān, Iʻtimād Khan, Md. Hādī al-Husaynī, Muʻtamad Khān, Amjad Khan, Md. Ibrāhīm, Khīradmand Khān, Nasr al-Din, Munʻim Khān, Khān-khānān, Maymanat Khān, Md. Ṣāliḥ, Md. ʻAlī, Suhayi, Arshad Khān, Md. Bāqir, Nūr Md., etc., were the superintendents and Taḥseīldārs of the Imp. library.

[2] For his life see *Sprenger Cat.*, p. 17, *Ātashkadah* and *Riyāḍ al-Shuʻarā'*.

Bodl. Lib. Cat. No. 1445-II. Written in S̲h̲ikastah. Undated but an old copy.

Beg. :— آغاز گفتار کنیم الخ -

(R. S. Lib.)

239.

صد پند لقمان مع رساله خواجه عبد الله انصاري

The popular hundred sayings of Luqmān (Æsop) with the abovementioned religious tract of 'Abd-Allāh Anṣārī, bound in one volume. This valuable MS. dated A.H. 945 = A.D. 1539 is in the handwriting of Mīr 'Alī (d. A.H. 957 = A.D. 1550), one of the most accomplished Nasta'līq writers. Like the preceding copy this MS. bears the autographs of the emperors Jahāngīr and S̲h̲āhjahān, and the Princess Jahān Ārā Begam which is very rare. A seal of this accomplished lady is however found in a very valuable copy of an unique work *S̲h̲ahans̲h̲āh Nāmah* preserved in the *O. P. Lib. Cat.* (Bankipore). (See Vol. III, p. 1, No. 265).

Jahān[1] Ārā, the eldest child of S̲h̲āhjahān, was the most accomplished lady of S̲h̲āhjahān's harem. She is the authoress of the famous Persian work "*Mūnas al-Arwāḥ*," a notice of the celebrated saint K̲h̲wājah Mu'īn[2] al-Dīn *Chis̲h̲tī*, (d. A.H. 633 = A.D. 1235), composed in A.H. 1049 = A.D. 1639.

The MS. bears two notes by S̲h̲āhjahān, one by Jahān Ārā and one by Jahāngīr.

(1) Note by S̲h̲āhjahān (A.H. 1037-1069 = A.D. 1627-1658). In this note the emperor says that the MS. was received for his library in Akbarabād in Rabī' I, A.H. 1039 = A.D. 1629 :—

بسم الله الرحمن الرحيم — اين پند نامۀ لقمان حكيم وغيرة كه بخط
خوب ملا مير علي ست بتاريخ بست و پنجم ماة ابان الهي سنه ۱۰۳۹ هجري
۱۶۲۹ ع در دار الخلافة اكبراباد داخل كتاب خانۀ اين نيازمند درگاة شد - حررة
شهاب الدين محمد شاة جهان بن جهانگير بادشاة بن اكبر بادشاة غازي -

Immediately after the emperor's signature is the endorsement قيمت هزار روپيه, which suggests the price of the MS. to be one thousand rupees.

(2) Another Note by S̲h̲āhjahān.

In this note the emperor says that he gave this "book of admonitions" to his beloved daughter Jahān Ārā Begam in Ẓu'l Ḥijjah A.H. 1040 = AD. 1630 :—

---

[1] Jahān Ārā died A.H. 1092 = A.D. 1681. (See *Ma'āt̲h̲ir-i-'Ālamgīrī*, p. 213, and *'Amal-i-Ṣāliḥ* (Bib. Ind.), p. 80.

[2] For K̲h̲wājah Mu'īn al-Dīn, consult *K̲h̲azīnat al-Aṣfiyā*, pp. 256-266

این پند نامه را در ذی الحجه سنه ١٠٤٠ هجري [١٦٣٠ع] موافق
سنه ٢ جلوس مبارک بفرزند ارجمند سعادت مند برخوردار کامگار بجان
برابر بلکه از جان بهتر جهان آرا بیگم ......

One or two words at the end of the note have been unfortunately pasted over by the foolish binder. On the left side of the first note is the following note by Jahāngīr[1] (A.H. 1014-1037 = A.D. 1605-1627) :—

الله اکبر — بتاریخ سیوم محرم سنه ١٥ داخل کتاب خانهٔ این نیازمند
درگاه الهي شد - حررة جهانگیر ابن اکبر - پند نامهٔ لقمان حکیم و سخنان
عبد الله انصاري که بخط ملا میر علي ست -

(3) The fly-leaf at the end of the MS. bears the following note by Jahān Ārā, in which she highly praises the sayings of 'Abd-Allāh al-Anṣārī :—

این چند سخن که خواجه عبد الله انصاري شیخ الاسلام وقت خود
گفته است که اگر هزار زبان داشته باشم که تعریف نمي توان کرد گوش را
و جان و دل را عجب خبر میدهد اگر توفیق رفیق گردد - حررة جهان آرا
مرید حضرت شیخ خواجه معین الدین چشتي قدس سره -

Nawwāb Kalb 'Alī Khān from a man of Benares purchased in the year A.H. 1300 = A.D. 1882 this valuable copy for Rs. 1,000 for this library :—

---

[1] Jahāngīr had a good library (see Tārīkh Henrī, by Md. Bāqir 'Alī Khān B. Shāh Kalīm-Allāh Bukhārī, p. 2, *Darbār Akbarī*, p 666). During his reign Maktūb Khān was a Superintendent of the Royal Library (see *Tuzak-i-Jahāngīrī* by Rogers and Beveridge, p. 12). He was very fond of MSS. When he went to Gujrāt, he took a library with him. To the Shaykhs of Gujrāt, he presented from his library such books as the *'Tafsīr Ḥusaynī*, *Kashshāf and Rawḍat al-Aḥbāb*; and on the back of each of the books (MSS.) he wrote the day of his arrival in Gujrāt and the date of presentation. (See *Tārīkh Jahāngīrī*, by Rogers and Beveridge, pp. 439, 440).

Jahāngīr was a great lover of MSS. and books as Mr. Martin says :— "Collectors (of MSS.) complain of the exorbitant prices they are called upon to pay for Persian MSS. and the highest prices now paid are small in comparison with the sums they cost their former owners. The MS. for which Jahāngīr paid 3,000 gold rupees—a sum equivalent to Rs. 10,000 —would not fetch Rs. 2,000 at a sale in Paris to-day........."

The Mongols, the Timurides, the Mughals, Emperors and Amīrs, all paid prices which we hardly understand, and it was not unusual for a celebrated MS. of the *Qu'rān* to realize a sum that would be equivalent to about a million francs in modern currency. (See Martin's *Miniature Painting and Painters of Persia, India and Turkey*, Vol. I, p. 58). Many eminent painters and illustrators were employed in his library.

پند نامه حضرت لقمان و رسالهٔ خواجه عبد الله انصاري نوشته ملا مير علي كاتب سلطاني بخط نستعليق دو لوح طلا و لاجورد بر حاشيه نيل طلا بتاريخ شانزدهم ذيقعده سنه ۱۳۰۰ هجري [۱۸۸۲ع] از بنارس آمده داخل كتب خانه گرديد - كلب عليخان -

The MS. is carefully preserved in a splendid binding.
Beginning of Ṣad Pand Luqmān :—

الحمد لله رب العالمين ... اين چند پند سودمند است كه لقمان الخ

Beginning of Risālah Khwajāh ‘Abd-Allāh Anṣārī :—

با رب دل ما را تو برحمت جان ده
درد همه را بصابري درمان ده
(خرد نامهٔ اسكندري)

It is not out of place to mention here that a most valuable and well known MS. beautifully illuminated entitled ***Khirad Nāmah-i-Iskandarī***, an ethical *Mathnanī*, by ‘Abd al-Raḥmān Jāmī (d. A.H. 898 = A.D. 1492), written by the same celebrated scribe Mīr ‘Alī [1] on the same date (A.H. 945 = A.D. 1539) and bearing on the 1st fly-leaf the seals and autograph of the Emperor Shāhjahān [2] and purchased by him for his library for rupees three thousand (Rs. 3,000) :—

---

[1] In the *Tuzuk-i-Jahāngīrī* (Sayyid Ahmad's edition), p. 81, mention is made of another master-piece of the same calligrapher, Mīr ‘Alī, which was valued at 1,000 gold-muhars (= Rs. 15,000). "The Khānkhānān presented [in A.H. 1019 = A.D. 1610] a most splendid copy of Jāmī's *Yūsuf Zulaykhā* in the handwriting of Mīr ‘Alī. Its price is 1,000 gold-muhars."

Rawḍat al-Anwār of Khwājū Kirmānī transcribed by the same calligrapher (see my *Persian Note* No. 201, *Būstān* No. 196, and for his work No. 233).

Maṭla'al-Anwār of Amīr Khusraw also written by the same scribe (see *O.P. Lib. Cat.*, Bankīpore. Vol. I, p. 191, and Vol. II, No. 196, p. 79).

Another copy of the *Ṣad Pand Luqmān* written by the same scribe is preserved in the Nawwāb of Luhārū's library (Delhi), as noted in the *Catalogue* of the *Loan Exhibition of Antiquities*. (See p. 68).

For Mīr Alī's life see *Ḥabīb al-Siyar*, Vol. III, part III, p. 344.

[2] For another autograph of Shāhjahān see Vol. II, *Pādishāh Nāmah's* first fol. on the margin, which MS. belongs to the *A.S.B. Lib.* No. D. 35 (wrongly noted as printed).

Raḍī Sharḥ-i-Kāfiyah. MS. copy, Rāmpore State library, has an autograph of the Emperor (see for this my *Arabic Notes* No. 150 in the *J.A.S.B.* XIII, 1917. I saw at Benares City (Shiwālah) another autograph of the Emperor Shāhjahān on the 1st fly-leaf of a magnificent copy, entitled *Muqaṭṭa‘āt-i-Ibnyamīn*, transcribed by the famous calligrapher Sulṭān ‘Alī al-Mashhadī (for his life see my *Persian Note* No. 36). The valuable copy was in the possession of one Mīrzā Kām Bakht, who said that he belonged to a princely family. See my *Pers. Note* (No. 101, foot-note No. 1). Shāhjahān and Jahāngīr's autographs are on the *Dīwān-i-Mīrzā Kāmrān*, an unique copy, written by the celebrated calligrapher Maḥmūd of Harāt. (See *O.P. Lib. Cat.*, Vol. II, p. 145, No. 237.)

این خرد نامهٔ اسکندري که نگاشتهٔ نادرهٔ عصر ملا میر علیست بتاریخ
بست و پنجم ماه بهمن الهي موافق هشتم شهر جمادی الثانیه سنه ۱۰۳۷ هجري
[۱۶۲۷ ع] که روز جلوس مبارک است داخل کتابخانه این نیازمند درگاه الهي شد -
حرره نور الدین جهانگیر بن اکبر بادشاه غازي -

Is in the possession of Bābū Protapa Chandra Ghosha of Calcutta, who gave it on loan for Exhibition[1] at the *A.S.B.*, which was held under the auspices of His Excellency Lord Carmichael, Governor of Bengal, on the 3rd Feb., 1915 A.D.

240.

قانون النسا

A treatise dealing with the manners and customs of eastern women, without author's name. This treatise is known as کلثوم ده نه. The work is similar to عقائد النسوان mentioned in *Bodl. Lib. Cat.* No. 1890.

Scribe·—Ghulām Nabī. Written in poor but legible Indian Ta‘līq. Undated.

Gulistān which was in Farḥ Bakhsh library in Oudh (for Oudh libraries see my *Pers. Notes* (foot-note), No. 209), formerly purchased at Rs. 1,500 for the Imp. library of Shāhjahān, transcribed by the famous calligrapher Ḥakīm Ruknā. There was a note on the 1st fly-leaf by the Emperor (see *Sprenger Cat.*, p. 548). See *J.A.S.B.* for July 1869, p. 190, for the historical value of Shahjahān's autograph. The Emperor Shāhjahān had a very valuable library and fine collection of Arabic and Persian MSS. The management of the library was good. Mīr Yahyākāshī (see *Bodl. Lib. Cat.*, p. 255), Mu‘īn al-Dīn, Maktūb Khān (see *O.B.D.*, p. 236), ‘Ināyat Khān (see Elliot, Vol. VII, p. 74, *Br. Mus. Pers. Cat.* p. 261), Fāḍıl Khān, etc., etc., were the superintendents of his library.

[1] A descriptive list of the MSS. etc. shown at the Exhibition are as follows:—(1) A *Muraqqa‘* (album) containing miniature paintings of some of the Mughal Emperors and noblemen. (2) An illuminated and illustrated copy of the *Dīwān* of Mīr Ḥasan of Delhī (d. A.H. 727 = A.D. 1326), a contemporary of the famous poet Amīr Khusraw. Kindly lent by Nawwāb Sayyid Md. Khān Bahādur, late Inspector-General of Registration, Bengal. (3) An illuminated and illustrated copy of the famous *Sikandar Nāmah of ‘Nizāmī’* (d. A.H. 600 = A.D. 1203). Kindly lent by Ḥāfz Nazīr Ahmad (Editor of these *Notes*). (4) An unique illuminated copy of the *Qur'ān* (for details see *J.A.S.B.*, Vol. XIII, 1917, No. 121, my *Arabic Notes*). (5) *Qur'ān* in thirty leaves only. On each leaf one *Sīpārah* is written in beautiful calligraphy. It bears the seals of Nawwāb Nāẓim Bengal, Nawwāb Shams al-Nisā Begam and Nawwāb Shāh Khānam. (6) *Ḥamā'il* written on gold-sprinkled paper, transcribed by the famous calligrapher Md. ‘Ārif al-Haravī, who got the title of *Yāqūt Raqam Khān* in the time of Bahādur Shāh (A.H. 1119–1124 = A.D. 1707–1712). ‘Ārif was a pupil of ‘Abd al-Bāqī Ḥaddād, a famous Naskh writer. (7) A *Qur'ān stand* said to have been used by the Emperor Jahāngīr—made of jade. Kindly lent by Nawwābzāah Khusraw Mīrzā, son of Nawwāb Wālā Qadr Sayyid Husayn ‘Alī Mīrzā of Murshidabad.

Beg. :— اما بعد این رساله ایست در باب ادب و اطوار زنان که اعتقاد کلي الخ

(Aghā Karbalā'ī, Cawnpur.)

241.

گنج الگنج

A very valuable copy on Ethics.
Author :—Abu'l Qāsim ?
The author's name is written on the 'Unwān of the MS.
Written in elegant Ta'līq, dated A.H. 1232 = A.D. 1816.

Beg. :— آغاز حمد بیحد و ثنای بیعد حکیمی را که مناظم عالم الخ

(Ahli Islām Lib., Madras.)

242.

گوهرستان

A work on ethics, by 'Azīz-Allāh of Benares, composed in the time of the emperor Shāhjahān (A.H. 1037-1068 = A.D. 1627-1657). Written in Shikastah-Āmīz. Dated A.H. 1107 = A.D. 1695.

Scribe :—Ghulām Rasūl Ṣiddīqī al-Bihārī.

Beg. :— منت و مُنت مرجان آفرینی را که گلستان گفتار الخ

(R. S. Lib.)

XVIII.

POLITICS.

243.

هدایت الفواید

A treatise on political wisdom, by Hidāyat-Allāh Bihārī. Composed A.H. 1126 = A.D. 1714 in the time of Farrukh Siyar, Emperor of Delhī, A.H. 1124-1131 = A.D. 1712-1718. It is divided into 5 chapters, each of which is subdivided into several Faṣls. Written in Shikastah.

Beg. :— حمد بیحد مر خدای عز و جل را که بانسان شرف برجمیع مخلوقات بخشید الخ

(R. S. Lib.)

XIX.

MATHEMATICS.

244.

اعجاز الحساب

A work on Arithmetic, by Md. Amīn B. Md. Sa'īd al-'Alwī. Composed A.H. 1072 in the time of the Emperor Awrangzīb (A.H. 1068-1118 = A.D. 1657-1706). It is divided into a مقدمه, two مقاله and a خاتمه. Written in minute Ta'līq. Not dated.

Beg. :— الحمد للّٰه الذي متنعما بنعمائه بلا حساب و ارسل نبيه الخ

(R. S. Lib.)

245.

ترجمه اقليدس فارسي

A Persian translation of the elements of Euclid, made from the Arabic version of K͟hwājah Naṣīr al-Dīn Ṭūsī (d. A.H. 672 = A.D. 1273. See *Brock.*, Vol. I, p. 508).

Translator :—Maḥmūd B. Mas'ūd al-S͟hīrāzī (d. c. A.H. 710 = A.D. 1312. See *Brock.*, Vol. II, p. 211). It appears from the preface that the work has been written for Amīr S͟hāh B. Amīr Sa'īd *Tāj al-Millat-Wa'l Dīn* Mu'tazz B. Ẓāhir.

(اميرشاه بن امير سعيد تاج الملة و الدين معتز بن ظاهر)

Written in a small rough Nasta'līq, dated A.H. 780 = A.D. 1378, seventy years after the death of the author.

For another translation entitled *Fawā'id Jamāli* see *Br. Mus. Pers. Cat.*, p. 449ᵃ.

Beg. :— با عنايت رباني حجاب انتظار از تتق چهرهٔ مراد الخ

(Bahādur S͟hāh, Moc͟hī gate, Lahore.)

246.

بسيط الحساب

A treatise on mathematics, by 'Ubayd—'Allāh B. S͟hayk͟h 'Isā al-Ṣiddīqī al-Suhrawardī of Gūpāmavī. It is divided into a *Muqaddamah*, two *Bābs* and some *Faṣls*. Written in Ta'līq. Undated.

Beg. :— سپاس و ستايش بيحد و لا عد بيزدان جهان جلّت آلاؤه
و عمت نعماؤه

(R. S. Lib.)

247.

تشريح الاعمال

A treatise on Mathematics.

Author :—Qāsim ‘Alī Qānī ?

Scribe :—Md. Riḍā Mashhadī. Written in Nasta‘līq. Dated A.H. 1091 = A.D. 1680.

Beg. :— شكر و سپاس الخ

(Qāḍī ‘Ubayd-Allāh Lib., Madras.)

248.

مطلع الهند

A work treating of the sciences and customs of the Hindūs, in five *Maṭla's* and a *Khātimah* as follows :—

(۱) درفلسفه و طبيّات (۲) در هندسه (۳) در حساب (۴) درهيئة (۵) موسيقي -

See *Br. Mus. Pers. Cat.*, p. 1026^a xxi, for notice only.

Author :—Salāmat ‘Alī Khān Ṭabīb, entitled Ṣadāqat Khān. Written in various hands. Dated A.H. 1262 = A.D. 1845.

Beg. :— بعد از حمد و سپاس، ايزد لا يزال و درود ابقای ذوی الافضال الخ

(Wajed Ḥusayn, Lucknow.)

249.

مونس الفضلا

(Wrongly styled المونس في نزهة المجلس) A treatise on the same subject by Muhammad Ghaznavī. Composed in the time of Md. B. Bahrām Shāh. Written in Naskh. Dated A.H. 778 = A.D. 1376.

Beg. :— حمد و ثنا آن خدايرا كه مردان راه او جان و دل بدهند الخ

(R. S. Lib.)

250.

المونس فی نزهة اهل المجلس

Very rare and interesting selections from the Mathematical works in four treatises by Shaykh Muhammad B. Ayyūb al-Māzandarānī (?). For Mâzandrân see Mu‘jam, Vol. IV, p. 392.

Some mischievous hand has erased the name of the transcriber :—

علي يد العبد الضعيف ... الشاكر بمدينة محروسة ... حماها الله تعالى
يوم الجمعة وقت ظهر السادس عشر شهر ربيع الآخر سنه ۷۷۸ هجري

Written in Naskh. Dated A.H. 778 = 1376.

(۱) Beg. :— سپاس خدايرا كه معبود بسزا است مالک فرد ديهمتا است الخ

(۲) Beg. :— حساب بالضميرات و بالتباس بگويم تا عددی الخ

(۳) Beg. :— مسايل الوصايا اگر پرسند كه زيد عمر را وصيت كرد بمالی الخ

(۴) Beg. :— بدان اعزک الله تعالى كه معني ضرب باصطلاح محاسبان الخ

(R. S. Lib.)

XX.

ASTRONOMY

251.

زيچ اشكي

An autograph but incomplete copy of a treatise on astronomy, by *Ashkī*, a native of Qumm. who came to India and died at Delhī, or Āgrah, in A.H. 972 = A.D. 1564. See *Sprenger Cat.*, p. 30, pp. 56 and 118. For author and his another work see *Br. Mus. Suppl. Pers. Cat.* No 306, and *Natā'ij al-Afkār*, p. 27. Written in good Nasta'līq, gold-ruled margin, not dated.

(Niẓām Lib., Hyderabad.)

252.

كشف الحقايق

An extensive, valuable and old commentary upon the famous astronomical work زيچ ايلخاني of Naṣīr al-Dīn Ṭūsī (d. A.H. 672 = A.D. 1273, see *Brock* I, p. 508).

Commentator :—Ḥusayn B. Md. Nīshāpūrī al-Qummī, known as Niẓām. This is the commentator's autograph, dated A.H. 709 = A.D. 1309, as shown by the following subscription :—

تمام شد عبارت كشف حقايق زيچ ايلخاني بر دست مؤلف اين اضعف
عباد الله تعالى و احوجهم الى عفوه و غفرانه حسن بن محمد النيشاپوري

معروف بنظام نظم الله احواله فی الدارین - در تاریخ دهم ماه مبارک ذو القعده سنه تسع و سبعمائة هجریه رحم الله من اذا نظر فیه و استفاد منه [و] دعا لمؤلفه بالخیر -

The name of Md. B. ʻAlī al-Sāwjī, a patron of the author, is written on the beginning of the fly-leaf within an illuminated circle :—

برسم خزانهٔ کتب الصاحب الاعظم سلطان وزراء العالم سعد الحق و الدنیا و الدین تاج الاسلام و غیاث المسلمین محمد بن علي الساوجي اعزه الله تعالی و ضاعف اقتداره -

Probably the author wrote this work for him. Written in minute and a very fine Taʻlīq.

For another *Kas͟hf al-Ḥaqāʼiq* see *Br. Mus. Pers. Cat.*, p. 450^b II, and *Br. Mus. Suppl. Ar. Cat.* No. 767.

Beg. :— اجناس سپاس بیقیاس که مقالهٔ اوهام انام الخ

(R. S. Lib.)

253.

مدخل منظوم[1]

A treatise in verse on astronomy, by K͟hayr-Allāh[2] al-Muhandis of Lāhore, composed in A.H. 1150 = A.D. 1737, as mentioned in the following :—

بنـــدهٔ ذره خیـــر الله   که ندارد باهل دنیـــا راه
بمهنـــدس شهیـــر در افواه   والد این فقیـــر لطف الله[3]
در هزار است یکصد و پنجاه   نظم این چند نکتهٔ دلخواه

Written in fine Taʻlīq. Dated A.H. 1300 = A.D. 1882.

Beg. :— هیچ کام و دهن صدا نکنه   تا مراو را مدد خدا نکند

(Ḥāfẓ Aḥmad ʻAlī K͟hān Lib., Rampore).

254.

معراج السماء

A work on astronomy, by Qāsim B. Md. Ḥusayn, composed at the request of Mīrzā Md. Ṭāhir Majlisnavīs. It is divided into 2 مقدمه *muqaddamah*, 15 مقاله *maqālah* and a خاتمه *k͟hātimat.* Written in a minute Ta'līq within gold-ruled borders. Not dated.

---

[1] For another *Madk͟hal* see *Bodl. Lib. Cat.* No. 1549.

[2] K͟hayr-Allāh was one of the chiefs of the observatory made by Rājah Sawāʼī Singh of Jaipore by the order of the Emperor Muhammad S͟hah, at Delhi in A.H. 1127 = A.D. 1714. (See preface of *Zīch Muhammad S͟hāhī*.)

[3] For Lutf-Allāh and his works see *Br. Mus. Pers. Cat.*, p. 451^a, and *Ind. Off. Lib. Cat.* No. 2253.

Beg. :— شکر و سپاس بیرون از سرحد حصر و قیاس حکیمی را رواست که بمقتضای حکمت بالغه الخ

(R. S. Lib.)

XXI.

Astrology.

255.

احکام العوام

A very valuable copy on astrology by 'Alī S͟hāh B Md. who flourished in A.H. 690 = A.D. 1291. (See Dr. Ross and Mr. Browne, *Cat.*, p. 88.) The author dedicated this work to his patron 'Abd al-Bāqī.

For other copies see W. Pertsch, *Berl. Lib. Cat. Pers. MSS.*, pp. 363, 367, and *A.S.B. Government Coll.* of Part. I, p 2. No. 13 has an incomplete copy noted wrongly to be in Arabic, and stated that the author was in the A.H. 1050 = A.D. 1690.

Another copy mentioned by Dr. Ross and Mr. Browne, p. 88.

Written in a very good Nasta'līq at Constantinople.[1] Dated A.H. 1069 = A.D. 1658.

Beg. :— حمد و ثنای آفریدگاری را که دوایر نجوم الخ

(Maḥbūbyār Jang Lib., Hyderabad.)

256.

لطایف الاکرام فی احکام الاعوام

A treatise on the principles of astrology, by Md. al-Ḥusaynī called as سید المنجم (?). Transcribed by the order of Aṣg͟har 'Alī

---

[1] In Constantinople there are 46 libraries, including the Imperial Lib. containing 85,000 MSS. and books. There are many autographs, old copies and many works which were collated and corrected by eminent learned men. There are many rare works of Ibn Rus͟hed (d. A.H. 595 = A.D. 1198), Ghazzālī (d. A H. 505 = A.D. 1111, see *History of the Saracens*, by Amīr Alī, p. 333), Fak͟hr al-Dīn Rāzī (d. A.H. 606 = A.D. 1209), Fārābī (d. A.H. 339 = A.D. 950), and Abū Alī Sīnā (d. A H 428 = A.D. 1037); and the correspondence about the mysticism between Ṣūfī Abū Sa'īd B. Abu'l K͟hayr (d. A. H. 440 = A.D. 1048, see *K͟hazīnat-al-Aṣfiya* Vol. II, p. 229) and Abū 'Alī Sīnā exists in the shape of treatises. (See for fuller details *Safarnāmah-i-S͟hiblī* (Urdū), pp. 79-87). For geographical information, see Mu'jam, Vol. IV, p. 95.

K̲h̲ān, the father of the owner of the Lib. Written in Ta'līq. Dated A.H. 1290 = A.D. 1873.

Beg. :— چنین گوید محرر این سواد اضعف‌العباد محمد الحسیني المدعو سید المنجم - الخ

(Ḥāfiz Aḥmad 'Alī K̲h̲ān Lib., Rampore.)

XXII.

Falconry.

257.

باز نامه تیموري

An extremely valuable and extensive work on falconry, with their different diseases and their treatment, illustrated with beautiful pictures.

Author :—S̲h̲āhīn Beg K̲h̲ān B. Ṭulg̲h̲ār Beg K̲h̲ān Buk̲h̲ārī. Composed in the time of Ṭug̲h̲ān Tīmūr K̲h̲ān (A.H. 737-753 = A.D. 1336-1352).

The work is introduced by a scholarly preface. A full table of contents is given at the beginning of the work. This is an abridgment of *S̲h̲ikārnāmah-i-Ilk̲h̲ānī* (شکار نامهٔ ایلخاني) as the author states in the preface, fol. 5.

Written in bold Indian Ta'līq within golden borders. 'Unwān illuminated. Undated.

Beg. :— شاهباز بلند پرواز حمد بی نیار را قوت پرواز کجا که بر کنگرهٔ کهنه حقیقت میرسد

End :— و این تصرف میر صاحب میر عبد الرزاق حکیم است و آزمودهٔ فقیر است

(Abd al-Ḥusayn, Lucknow.)

258.

باز نامه

A treatise on falconry; containing instructions for selecting the best species of hawks, and method of teaching them, also the disorders they are subject to, and mode of cure.

Author :—M. Riḍā B. K̲h̲wājah Md. Yūsuf (?). Written in Ta'līq. Undated.

Beg. :— حمد بیحد و سپاس بیقیاس از ازل تا ابد مر بادشاهی را الخ

(Ahl-i-Islām Lib., Madras.)

259.

رساله کبوتران

A treatise on falconry by an anonymous author. The work is divided into 20 chapters (باب). Written in Ta'līq. No date.

Beg. :—الحمد لله اس رساله ایست در فنون ترلیب و ترکیب
کبوتر بازي و پرانیدن آن الخ

(Sayyid Md. Lib., Lucknow.)

XXIII.

FARRIERY.

260.

راحت الفرس

A treatise on farriery. Translated by the order of Himmat Khān[1] (d. A.H. 1092 = A.D. 1681).

Translator :—Anand Rām, poetically called '*Mukhliṣ*'[2] (d. A.H. 1164 = A.D. 1750). It is divided into 4 chapters (باب). Written in Ta'līq. Undated.

Beg. :— آرانش عرصۂ عبادت در نیانش میدان اشعارت حمد
مبدهیست که اشهب عقل را الخ

(R. S. Lib.)

261.

رایض نامه

A treatise on farriery without author's name. It is divided into a مقدمه, 40 chapters (باب) and a خاتمه. Written in Shikastah-Āmīz Ta'līq. Dated A.H. 1085 = A.D. 1674.

Beg. :—الحمد لله . . حمد و سپاس و شکری بیقیاس آفریدگاری
را هرچند که فارسان - الخ

(R. S. Lib)

---

[1] For Himmat Khān see *O.B.D*, p. 160, *Br. Mus. Pers. Cat.*, p. 697^{b}, *Ma'āthir al-Umarā'* and *Tazkirat al-Umarā'*.

[2] For *Mukhliṣ* see *Oude Cat*, p. 159, *Natā'ij al-Afkār* and *Khizānah-i-Āmirah*. For his another work see my *Pers. Note* No. 194.

262.

فرس نامه

A treatise on the same subject, by Md. B. Maḥmūd, composed in A.H. 767 = A.D. 1365 by the order of Muẓaffar al-Dīn Bākā. It is divided into 2 kinds (۱) در معرفت اسپان و سال و رنگ—: (قسم), و نیک و بد آن - الخ subdivided into 40 chapters (باب)

(۲) دردرد و زحمت که در اسپ پدید آید -

Subdivided into 33 sections (فصل). Written in Ta‘līq within gold-ruled borders. No date.

Beg. :— الحمد للّٰه حمدا يوافي نعمه و يكافي مزيده ... سپاس
و حمد فراوان وستایش شکربی پایان حضرت

(R. S. Lib.)

263.

کبوتر نامه

A treatise on pigeon-flying.

Author :—Sayyid Md.

A copy of the same exists in the Sh. ‘U. Qāḍī ‘Ubayd-Allāh library, Madras.

Written in usual Ta‘līq. Undated.

Beg. :— بادگاری چون میان چون زواله خاسته
شد کبوتر نامهٔ رنگین چنین آراسته

(Ahl-i-Islām Lib., Madras.)

The following interesting works are bound in one volume :—

264.

کبوتر نامه

(1) A treatise on pigeon-flying by Md. Wālā Mūsavī. Written in Ta‘līq.

Beg. :— حمد بیعد صانعی سزا است که کبوتر دل را - الخ

265.

دولت نامه

(2) A treatise on the importance of wealth by the same author. Written in Ta‘līq.

Beg. :— بعد از حمد بیشمار و ثنای بسیار مر خالق لیل و نهار را الخ

266.

مرغ نامه

(3) A versified treatise on cock-fighting, by the same author.

Written in Ta'līq. Dated A.H. 1236 = A.D. 1820.

Beg. :— وقتی از وقتهای نادانی بخیال آمده هوا رانی

(R. S. Lib.)

267.

فیل نامه

A rare and interesting treatise on elephant taming.
Author unknown.
It is divided into 17 chapters. (باب).

The follwing elephant drivers have left prescriptions for the treatment of ailments of elephants.

بهیکن خان - سید علي - گهاسي خان - شاه محمد فوجدار - حسن خان - موسی خان - جان محمد - ولي محمد - شاه محمد - ابراهیم خان - کالیخان روشن خان -

Written in Nasta'liq. Undated

(Niẓām Lib., Hyderabad.)

XXIV.

ALCHEMY.

268

کیمیای باسلیقا

Otherwise known as کیمیای ملکیه. The work deals with alchemy and medicine.

Author:—Zayn al-'Ābidīn al-Mashhadī B. Sayyid Ṭabāṭabā'ī, composed by the order, of Sayyid Md. Riḍā Khān Bahādur Muẓaffar Jang, Nā'ib Niẓāmat of Bengal (d. A.H. 1206 = A.D. 1791), who was selected for the office of Chief Minister by the English after the death of Ja'far 'Alī Khān (see *O.B.D.*, p. 271, and *Br. Mus. Pers. Cat.*, p. 313).

The work has been translated from Arabic. It is divided into three parts (اجزاء).

Written in elegant Nasta‘līq within golden borders. Dated A.H. 1220 = A.D. 1805.

Beg. :— سپاس و ستایش پر فزون از حد فهم و حواس الخ

(Khalīl al-Dīn Aḥmad Lib., Benaras.)

کفایت الصنعة

An incomplete treatise on alchemy by Husayn al-Ḥusaynī, known as *Akhlāṭī*. The author says in the preface that he gave four names to this work and divided it into two sections (*Faṣls*) and three parts (*Aqsām*) :—

اکنون این کتاب را چهار نام نهادم که مرتبه چهار است (۱) برهنه
(۲) کفایت الصنعة (۳) نور العین (۴) خلاصة الصنعه ـ

Written in Naskh, undated.

Beg. :— حمد بیحد و ثنای بیعد خدای را عز اسمه و تعالی الخ

(‘Abd al-Ḥusayn, Lucknow.)

XXV.

MEDICINE.

270.

اختیارات بدیعی

A well-known treatise on materia medica, by ‘Alī B. al-Ḥusayn al-Anṣārī, known as Ḥājī Zayn al-‘Ābidīn (ḍ A.H. 806 = A.D. 1404). For fuller details see *Ind. Office Lib. Cat.* No. 2289.

A note[1] in it by Md. Quṭb Shāh (A.H. 1020-1035 = A.D. 1611-1625). the fifth Sulṭān of Golcondah, shows that the MS.

---

[1] In the Niẓām Lib. a MS. entitled *Kullīyāt Jāmī*, dated A.H. 987 = A.D 1579, has the following interesting note by the same king, dated A.H. 1023 = A.D. 1614 :—

از خار خار عشق تو در سینه دارم خارها
هردم شگفته بر زخم زان خارها گلزارها
از بس فغان و شیونم جنگیست خم گشته تنم
اشک آمده تا دامنم از هر مژه چون تارها
تا سوی باغ آري گذر سرو صنوبر را نگر
عمری پیش نظاره سر بر کرده از دیوارها

is most valuable and of great historical interest. The autographs of the king sufficiently prove the genuineness of the king's handwriting.

Written in good Ta'līq. Not dated.

Beg. :— اعداد حمد بیعدد الخ

(Mātā Pershād, Lucknow.)

زاهد بمسجد برده پی حاجي بیابان کرده طی
جامی که باشد نقل و می بیکاربست این کارها
تو داده دل با هرکسی من مردم از غیرت بسی
یکبار میرد هرکسی بیچاره جامي بارها

کتبه العبد الخالص لمولاه سلطان محمد قطبشاه زاد توفیقه فیما یمناه
في تاریخ ۲۸ شهر رمضان سنه ۱۰۲۳ هجري ۱۶۱۴ ع

Another note by the same king is on the MS. entitled *Dīwān-i-Ḥafiz* of *O.P. Library*, [Bankipore], Vol. I, No. 153, p. 262 :—

دیوان خواجهٔ حافظ تمام شد - در کتاب خانهٔ عامره بخط محمد حسن
کاتب بتاریخ اوایل ماه جمادی سنه ۱۰۲۳ هجري [۱۶۱۴ ع] در دار السلطنت
حیدر آباد ... الخالص لمولاه سلطان محمد قطبشاه

I saw in the possession of Sayyid Maḥmūd of Merat a very valuable and fine MS. entitled *Kullīyāti-i-* (Muhammad) Qulī Quṭb Shāh (A.H. 989 1020 = A.D. 1581 1612), the fourth Sultan of Golcondah, with the following autograph note of the said Sulṭān Quṭb Shāh written on the first fly-leaf :—

کلیات شعار فصاحت آثار جنت مکاني فردوس آشیاني مغفرت پناه سمي
عالیحضرت محمد قلي قطب شاه نوّر مرقده تمام شد در کتابخانهٔ مبارکه
بخط محي الدین کاتب بتاریخ اوایل شهر رجب المرجب سنه خمس عشرین
اعني بعد الف من الهجریة [۱۰۲۵ هجري = ۱۶۱۶ ع] في دارالسلطنة حیدر آباد
حرّس الله عن الاضداد - کتبه العبد الخالص لمولاه سلطان محمد قطبشاه
بلغه الله تعالی فیما یمناه -

A note of the librarian 'Abd-Allāh Quṭb Shāh (A.H. 1035-1083 = A.D. 1625-1672), the 6th Sulṭān of Golcondah, is also written on the above-said autograph of the 5th Sulṭān :—

غزلیات محمد قلي قطب الملک که مشتمل است بر اشعار فارسی ودکنی
از اموال عبد الله قطب الملک در حیدر آباد داخل کتابخانهٔ سرکار شد -

The said fly-leaf bears four seals. Two are illegible, and of the remaining two, one is the seal of Sulṭān Muhammad Quṭb Shāh and the other is of Sulṭān 'Abd Allāh Quṭb Shāh. (For the brief accounts of the above three Sulṭāns see *Tārikh 'Azīz i-Deccan*, by Abdal Azīz (Urdu), pp. 19-43.)

271.

بحر الفواید

A work on medical science, by Ladhmal (لدهمل) B. Bahrūmal (بهرومل), composed at the request of his teacher Mīr Abu'l Fattāḥ al Ḥusaynī, during the reign of Awrangzīb 1068-1118 It is divided into a مقدمه and 38 chapters.

The MS. is 311 years old Written at Hyderabad in fine clear Naskh, within two gold-ruled columns.

For fuller details see *O.B.D.* p. 320, and *Sprenger Cat.* p. 632. Dr. Sprenger mentions that he saw a splendid copy of the said *Kulliyāt* in the *A.S B. Lib.*, but there is no autograph note in the MS. described by him. I searched for it but I regret to say that I have not been able to trace that copy in the *A.S.B. Lib.*

The owner wants to sell the former *Kullīyāt* (MS.) for Rs. 600.

For other autograph notes of Md. Quṭb S͟hāh and his librarian Najaf S͟hāh see W. Pertsch, *Berl. Lib. Cat.* Nos. 389 (*Rawdat al-Ṣafā*) and 607 (*Zak͟hīrah i Khwārzm S͟hāhī*)

The No. 389 has the following autograph :—

جلد چهارم از تاریخ میرخند که مسما [مسمی] ست بروضة الصفا در بیان
قضایای پادشاهانی که معاصر نبي عباس بوده اند - کتبه العبد الخالص
لمولاه سلطان محمد قطبشاه زاد توفیقه فیما یمناه - في تاریخ عشرین شهر
رمضان المبارک سنة ۱۰۲۳ هجري [۱۶۱۴ع]

This MS. was also for some years in the library of the celebrated Hafiz Raḥmat K͟hān, chief of the Rohilas (d. A.H. 1188 = A.D. 1774) : see for fuller details Pertsch, *Berl. Lib. Cat.*, pp. 393 394, and for Raḥmat K͟hān see *O.B.D.*, p. 148.

The No 607 has the following note :—

نجف شاه بندهٔ سلطان محمد قطبشاه ۱۰۲۰ هجري [۱۶۱۱ع] .

From these autograph notes it may be inferred that the king Md. Quṭb S͟hāh was very fond of studying and collecting interesting and valuable MSS and books. Mr. Stewart mentions in his preface of the *Tippū Sulṭān Library Catalogue* that many MSS. and books came from the Bijāpore royal library to the Tippū Sulṭān library, which contains 2 000 vols. of Ar. Pers. and Urdū MSS. in all the various branches of Muhammadan literature. Many of these were beautifully written and highly ornamented. I have seen many MSS. which originally belonged to the Lib of Tippū with the seals of Nuṣratjang, K͟hidr K͟hān, K͟hān Jahān, A. Wohhāb, etc. Probably these persons were attached to the Lib. of the Sulṭān. (For a short detail of the libraries of India see my Urdu article published in the *Aligarh Institute Gazette*, 1917, May 16).

A part of the royal library is still to be found at Bījāpore in the Āt͟hār-i-Maḥall. Mr. Fergusson tells us :—"Some of the books (MSS.) are curious and interesting to any one acquainted with Arabic and Persian literature. All the most valuable MSS. were, it is said, taken away by Awrangzīb in cart loads, and what remain are literally only a remnant, but a precious one to the persons in charge of the building who show them with a mournful pride and regret." (See Fergusson's *Architecture at Bijāpore*, p. 75).

Many valuable Arabic MSS. formerly belonging to the Bījāpore Library are now found in the *Ind. Office Lib.* : see preface of *Loth Cat.* and *Bombay Government Records*, No. XLI, *New Series*, pp. 210 sqq.

Written in bad S̲h̲ikastah. Dated A.H. 1183 = A.D. 1769.

Beg. :— حمد سپاس مر شفا بخشی را که بحکمت کامله خویش - الخ

(R. S. Lib.)

272.

تذكرة الشهوات في تبصرة اللذات

A work on medicine relating to the benefit of the marriage based on the traditions and sayings of the learned physicians, by Ṣafī al-Dīn Md. aṭ-Ṭabīb al-Gīlānī, composed A.H. 987 = A.D. 1579, in the time of Sulṭān Md. Qulī Quṭb S̲h̲āh (A.H. 988-1020 = A.D. 1580-1611). It is divided into a مقدمه, seven مقاله, and a خاتمه.

Written in minute Ta'līq, within gold-ruled borders. Undated.

Beg. :— - سبحان من قال زيّن للناس حُبُّ الشهوات من النساء الخ

(R. S. Lib.)

273.

ترجمه تذكرة الكحالين

A medical work on eye diseases. This is the translation of the Arabic work of 'Alī B. 'Īsā al-Kuḥḥāl (d. A.H 350 = A.D. 961). Vide *Ḥ. K̲h̲.*, p. 266, Vol. II, and *Brock.*, Vol. I. p. 236. It is divided into 21 گفتار. Translator's name is not mentioned in the MS.

Written in Ta'līq. Dated A.H. 1110 = A.D 1698.

Beg. :— الحمد لله ... این کتابیست که عبد الله ابن علي تصنيف کردة است و نام این الخ

(R. S. Lib.)

274.

ذخيرة خوارزم شاهي

A very old and valuable copy of the second volume of the famous Encyclopædia of Medical Science, by Zain al-Dīn Abū Ibrāhīm Ismā'īl B. Aḥmad B. Md. al-Ḥusaynī al-jurjānī (d. A.H. 535 = A.D. 1140). For details see *Ind. Office Lib. Cat.* No. 2280. From a note on the fly-leaf it appears that this MS. was presented in A.H. 1282 = A.D. 1865 to Nawwāb Kalb 'Alī K̲h̲ān (d. A.H. 1304 = A.D. 1886) of Rampore by Ṣadr al-Dīn B. Md.

Nizām al-Din :—ذخيرهٔ خوارزم شاهي نذر گذرانيده صدر الدين خان پسر مولوي نظام الدين. Headings are written in Kūfī characters. Dated A.H. 560 = A.D. 1164.

Beg. :— الحمد لله ... سيد امام اجل زين الدين

(R. S. Lib.)

275.

رساله آداب فصد

A medical treatise on the principles of venesection, by Kamāl al-Dīn Ḥusayn Shīrāzī.

Written in clear bold Ta'līq. Dated A.H. 1179 = A.D. 1765.

Beg. :—در باب فصد و آداب آن - عروق بدن دو قسم است—
۱ ۲
آورده و شرائين

(R. S. Lib.)

276.

شافي الاوجاع

A medical work on diseases.

Author :—Habīb-Allāh B Nūr al-Dīn Md. B. Ḥabib-Allāh al-Tūnī.

The work is divided into two Maqālah : The 1st Maqālah (section) treats of Pathology and the 2nd Maqālah (section) treats of diseases contracted externally :—

مقاله اول مشتمل بر امراضيست كه مخصوص است بعضو عضو از سر تا قدم - مقاله دوم محتوي بر امراضيست كه مخصوص نيست بعضو عضو و خوردن زهرها و گزيدن حيوانات -

The date of the composition of the work is A.H. 1221 = A.D. 1806, according to the following chronogram :—

سال اتمام كتابت چو ز كاتب جستم + نسخهٔ شافي الاوجاع شمرد از ثمر جد
۱۲۱۸ ۳

The MS. has been purchased from Ṭehrān (طهران) : it appears from a note on the fly-leaf.

Written in fine Nasta'līq. Not dated.

Beg. :—مراسم حمد صحيح و لوازم شكر صريح حكيمى را شايد كه بمحض حكمت كامله - الخ

(Sayyid Zayn al-'Ābidīn Lib., Murshidabad.)

277.

طب احمدي

A work on medicine, by Abd Allāh B. Ḥanẓalah of Damtūr (دمتوري), composed in A.H. 1234 = A.D. 1818 and dedicated to Nawwāb Aḥmad ʻAlī K͟hān of Rāmpore (d. A.H. 1256 = A.D. 1840). It is divided into some *Fuṣūl* and *Maqālāt*.

Written in Taʻlīq.

Beg.:— الحمد لله رب العالمين ... بعد می گوید فقیر محتاج یک رساله کوتاه در علم طب که مشتمل باشد بر مطالب ضروریه این فن و محتوي باشد صراحة بر معالجات امراض مشهودة كثيرة الخ

(R. S. Lib.)

278.

قرابادين كرامت الشفا

A pharmacopœa, in which compound medicaments are described in alphabetical order by Md. Bak͟hsh (Niʻmat-Allāhī), composed in A.H. 1224 = A.D. 1809 and dedicated to his spiritual guide S͟hāh Sayyid Karāmat ʻĀlī B. Sayyid Amānat ʻĀlī.

Written in Taʻlīq.

Beg.:— اقسام جواهر حمد بيحد و اضعاف لآلي ثناى بيعد تحفه جناب حكيم على الاطلاق جل جلاله و عم نواله را كه هيولاى بشري را از تركيب اربع عناصر معجون ساخته

(R. S. Lib.)

279.

قواعد التدبير

A manual of medicine by Maḥmūd B. ʻAbd-Allāh (?). The copy has been compared with the author's copy.

Written in Nastaʻlīq. Dated A.H. 973 = A.D. 1565.

(ʻĀlī Ḥusayn Lib., Hyderabad.)

280.

مجموعهٔ اكبري

A collection of medical works, by Mīr ʻĀlī Akbar B. Mīr Gadāi B. Mīr Sayyed. The work is divided into a مقدمه and 23 باب.

Written in small clear Ta‘līq Dated Faṣlī 1117 = A.D. 1712 = A.H. 1124).

Beg. :— ... بعد از حمد و ثنای و ستایش کریم لم یزل و لا یزال
مقدمه در احکام ایام سبعه و بیان تولد فرزندان الخ

(R. S. Lib.)

281.

مقالات دیسقوریدس

A Persian Glossary upon the work of Diescoridi's Materia Medica.

The author says in the MS. that this work has been translated into Arabic from Greek.

For Arabic work see *Br. Mus. Suppl.* No. 785; *Ibn Abī Uṣayba‘ah*, Vol. II, p. 46; *Fihrist*, p. 293, and *H. Kh.*, Vol. V, p. 75.

This Glossary contains Persian, Arabic, Hindī, Greek and Kashtīlā words and botanical and zoological terms with illustrations.

It is divided into six chapters.

Written in good Ta‘līq, undated but old.

(Niẓām Lib., Hyderabad.)

282.

منافع افضلیه

A collection of medical works from authentic works on medicine. by ‘Alī Afḍal Ṭabīb B. Md. Amīn Qazvīnī who composed it for his brother Ghīyāsh al Dīn ‘Alī. It is divided into a فاتحه, 30 منفعت, and a خاتمه. Transcribed by ‘Alī Ḥyder Khān al-Guwāliyar in the 45th year of Shāh ‘Alavī's reign.

Written in usual Ta‘līq.

Beg. :— الحمد لله رب العالمین ... چنین گوید اقل الاقل علی
افضل طبیب ابن محمد امین قزوینی - الخ

(R. S. Lib.)

XXVI.

INTERPRETATION OF DREAMS.

283.

تعبیر الرویا

A very interesting work on interpretation of dreams.

Author :—Abū Rayḥān Andalūsī (?).

From an autograph note of ‘Abd al-Raḥīm Khānkhānān[1] (d. A.H. 1036 = A.D 1626), the prime minister of Akbar the Great; at the end of the MS., it appears that this interesting MS. was presented[2] by the Emperor Akbar[3] to Bayram

---

[1] Another autograph note by the same Khānkhānān explaining the manner of taking omens from the *Qu'rān* is on the last fol. of a Qur'ān, which is in the *A.S.B. Govt. collection*, part II, No. 1; see J.A.S.B., Feb. 1910, p. xxix. (This splendid copy of the Qur'ān formerly belonged to his library. The Khānkhānān had a big and very valuable library at Ahmadābad. containing many valuable, rare works and a good and learned staff was attached to it. Mullā 'Abd al Salām of Bahrā'ich, Shujā' Mullā Md. Husayn, Mīr Bāqī Māwarā' al-Nahrī and Miyān Fahim were superintendents and Tahseildārs of the Imp library. Mullā Muhammad Amin Khurāsānī, a gilder of MSS. (طلا کار) and inventor (موجد) of Abrī paper, was in the library on a salary of Rs 4,000 a month. Mushfiq, Mādhū, Bahbūd Miyān Nadīm (brother of Fahīm), Mullā Md. Amīn were gilders and embellishers of MSS., and one of the famous calligraphers was Mullā 'Abd al-Rahīm 'Ambarīnqalam عنبرین قلم in the library. Many learned men used to come for study and self-improvement in the library. For Khānkhānān's life and library see *Ma'āthir-i-Rahīmī* of 'Abd al Bāqī Nahāwandi (MS. copy *A.S.B. Lib.* No. D268, leaf 480), *Maqālāl-Shiblī* [Urdū], pp. 135-152, *al-Nadwah* 1909, No. 3, p 13, and *Darbar Akbarī*, pp. 567-656).

[2] 'Abd al-Qādir Badā'ūnī also was presented with a copy of the *Anwār al-Mishkāt.*

[3] The Emperor Akbar took much delight in the collection of MSS. for his library. Some of the MSS in the royal library were kept in the haram and the rest in the outer apartments. He made several provisions for the good management of his library, and the MSS. were classed under sciences and histories. (See *Gladwin*, pp. 84, 85; and *Darbār Akbarī*, p. 114. The Emperor acquired a library belonging to I'timād Khān Gujrātī during the conquest of Gujrāt. It contained many rare, unique and fine MSS. and books which were transferred in the royal library. See *Tārīkh Badā'ūnī*, Elliot V, p. 519, *Tārīkh Akbarī*, MS. copy in *A.S.B.* Lib., leaf 58, *Darbār Akbarī*, pp 38 and 337). The Emperor Akbar collected an enormous library of extraordinary pecuniary value, to which probably no parallel then existed or ever has existed in the world. All the books were MSS. Akbar cared nothing for printed volumes. When the inventory of his treasures preserved in the fort of Agra was taken after his death, in October 1605 [= A.H. 1014], the books, 'written by great men. mostly very ancient and serious authors' adorned with extremely valuable bindings, and in many cases enriched with costly illustrations by the best artists, numbered 24,000 valued at nearly six and a half millions of rupees (6,463,731). The average valuation for each volume therefore comes to from Rs. 27 to Rs. 30, according to the rate of exchange assumed. The total value similarly was equivalent to Rs. 646.373 or 737,169. Mulla Pīr Muhammad Khān, who was a teacher of the Emperor, was one time the superintendent of the library (see *Tārīkh Akbarī*, MS. copy in *A.S.B.*, leaf 42, and *Darbār Akbarī*, p. 755), and Shaykh Abu'l Khayr, brother of Abu'l Fadl, was also some time superintendent of the library (see *Darbār Akbārī*, p. 356). Ghīyāth-Allāh of Shirāz was also librarian (see *Bodl. Lib. Cat.*, p. 221) When Faydī died he left also a big library containing 4,300 choice MSS., some of which were exquisitely copied with great care and expense. Most of them were autographs of their respective authors or were at least copied by their contemporaries. They were all removed to the Emperor's library and catalogued and numbered in three different sections. The first section included poetry, medicine,

Khān [1] (d. A.H. 985 = A.D. 1577) :—

الله اکبر جل جلاله ۔ این کتاب مستطاب از کتب خانهٔ والدي مغفور
خانخانان بیرم خان است از عطایای سلطان المعظم شاهنشاه جلال الدین اکبر
سنه ۲۴ جلوس والا ۔ العبد الاحقر عبد الرحیم ۔

Written in excellent and distinct Ta'līq, illuminated frontispiece. Undated.

Beg. :—افاصفکم ربکم بالبنین ۔ و اگر بینند که برداشت و یا فرشتگان
مي بریدند

(Niẓām Lib., Hyderabad.)

XXVII.

GEOMANCY.

284.

قواعد الهدایت

A work on geomancy (رمل) by Hidāyat-Allāh, composed in A.H. 1001 = A.D. 1592.

Written in bold Nasta'līq.

Beg. :—بدان ایدک الله تعالی که این علم شریف در اقصای عالم ۔ الخ

(Nadwah Lib., Lucknow.)

---

astrology and music; the second, philology, philosophy, sufism, astronomy and geometry; and the third, commentaries, traditions, theology and law. There were 101 copies of the poem *Nal Daman* in Faydī's collection (see *Tārīkh* Badā'ūnī, Elliot V, p. 548, *Darbār Akbarī* p. 368) and Blochmann, *Ā'īn Akbarī*, Vol. I, p. 491. The library has Persian MSS. in prose and verse richly illuminated by eminent artists. The famous MS. *Razm Nāmah* is said to have cost Akbar about Rs. 40,000. It is now at Jaipore (see Martin's *Miniature Painting and Painters of India, Persia and Turkey*, Vol. I, p. 127). The library had also a large fragment of a Kūfic *Qur'ānsharaf*, written in rather slender characters, approaching to Naskh, by the 3rd caliph 'Uthmān B. 'Affān (عثمان بن عفان) (d. A.H. 36 = A.D. 656) or transcribed from his autograph. It bears seal and signature of the Emperor Akbar and others on the last page. This valuable Qur'ān presented to the library of the East India House by Major Rawlinson, C.B., the Hon. Company's Political Agent in Turkish Arabia, and H.M.'s Consul at Baghdād, March, 1845 A.D. = A.H. 1262, and it is now in the Ind. Off. Lib. See for details Loth Cat. No. 5. For fuller details of the Emperor Akbar's library see Vincent Smith's *Akbar*, p. 424.

[1] Bayram Khān had also a nice library. For Bayram Khan's life see *Ma'āthir al-Umarā'* (Bib. Ind, Vol. I, p. 371-384), *Darbār Akbarī*, pp. 157-196, and *Ṭabaqāt Akbarī*.

XXVIII.

MUSIC.

285.

اصول النغمات

A work on Indian music, by Ghulām Riḍā B. Md. Panāh of Lucknow, composed in the time of Nawwab Āṣaf al-Dawlah (A.H 1188-1212 = A.D. 1774-1797 ; see *Br. Mus Pers. Cat.* pp. 311^a, 410^b, and 961^a.)

Written in a good Ta'līq, dated A.H. 1280 = A.D. 1863

Beg. :— نحمده و نصلي و نسلم .. وجد انگيزترنمي كه سوزان سينه ريشان محبت را الخ

(R. S. Lib.)

286.

رساله راگ

A treatise on Indian music, by Faqīr-Allāh, composed A.H. 1063 = A.D. 1652. A copy of this work, entitled راگ درپن, without the author's name, is mentioned in *Bodl. Lib. Cat.* No. 1847. Written in coarse Indian Ta'līq.

Beg. :— حمد و سپاس بیقیاس مر آفریدگاری را سزد که از حمد الخ

(R. S. Lib.)

287.

رساله در علم موسيقي

A short treatise on music, by Ghulām Md. of Waḥīdpur. It is divided into four chapters and some Faṣls.

Written in Shikastah, undated.

Beg. :— حمدی که لایق درگاه کبریا الخ

(R. S. Lib.)

288.

مقاصد الالحان

A treatise on music, by 'Abd al-Qādir B. Ghaybī al-Ḥāfiẓ al-Marāghī (d. c. A.H. 830 = A.D. 1426). According to *Bodl. Lib. Cat.* No. 1843 it is an abridgment of *Jāmi' al-Ilḥān* by the same author.

Two copies are mentioned in the *Bodl. Lib. Cat.* Nos. 1843-1844. For another copy see *Leyden Lib. Cat.*, Vol. III, No. 1426.

Written in a good Ta'līq, old copy, undated.

Beg. :—الحمد لله الذي زين الاصوات بطيب الحان و النغمات - الخ

(Nizām Lib., Hyderabad.)

XXIX.

RHETORIC.

289.

تحفة الشعراء

A treatise on the arts of poetry and rhetoric, by Ghulām Ḥusayn Khān, poetically called "*Jawhar*,"[1] who was in the year A.H. 1238 = A.D. 1822 in Hyderabad.

Written in Ta'līq.

Beg. :— صفای لوامع سخنهای دلپذیر

(M. 'Abd al-Barī Lib. Firangī Maḥall,[2] Lucknow.)

290.

گلزار معاني

A treatise on rhetoric, by Gul Md., composed in the time of Shāh 'Ālam (A H. 1253-1274 = A.D. 1837-1860) as he states in the preface :—

در صفات شاه عالم کن زبانرا رستخیز
تاکه یابي مدعا از هرچه خواهي نا و راست

The name of the author appears in the following verse :—

گل محمد دست را بهردعا اوکن فراز
هرچه داري مدعا از یک اشاره در نواست

---

[1] For his another historical work entitled *Tārīkh-i-Dil-afrūz*, history of the Nizāms, see *Br. Mus. Pers. Cat.*, p 325.

[2] In the time of the Emperor Akbar foreigners were allowed to trade in India for a fixed period. When the period expired, the traders returned to their homes, and their immovable property lapsed to the crown. On this condition, a French merchant came to Lucknow and there built a house of business called *Firangī Maḥall*. When his period expired he left, and the property was taken possession of by Government. Although this was situated in *Maḥallah* Chirāgh Bāgh, it is known by the name of *Firangī Maḥall*, a fact clearly shown in the *Farmān* of Aurangzīb which Mawlavī 'Abd al-Bārī showed me. See also *Aḥwāl Ulamā-i-Firangī Maḥall.*

The work is divided into 13 *Shumurdah* (شمرده).
Written in Shikastah. Not dated.

Beg. :— برشاهدان ترانه سنج و گوشه نشینان معارج گنج - الخ

(R. S. Lib.)

XXX.

RIDDLES.

291.

رسالجات در معمّا

The following two treatises on riddles by Shihāb al-Dīn B. Niẓām al-Ḥaqīrī (?).

Written diagonally in four columns in Shikastah, undated.
(2) A commentary upon a treatise of riddles by Shāh ʻAlī.
Commentator :—Hāshim Beg B. Ḥalwājī Beg Jantoli.
Written in a clear Naskh, undated.

Beg. :— ای تو حلال مشکلات همه   اسم توفیض بخش ذات همه

(M. A. Bārī Lib., Firangī Maḥall, Lucknow.)

292.

شرح معمّيات

A complete glossary of the famous treatise on logogriphs of Mīr Ḥusayn B. Md. al-Ḥusaynī (d. A.H. 904 = A.D. 1498). See *Br. Mus. Pers. Cat.*, p. 650, for Md. al-Ḥusaynī.

Commentator :—Md. B. ʻAlī al-Yundākī, as *Hāj. Khal.* in Vol. V, p. 639, says :— ومن شروحه الفارسية شرح محمد بن علي اليونداكي و اهداه الى السلطان ابي الغازي عبد العزيز بهادر -

The commentator composed the commentary at the request of some of his friends and dedicated it to Sulṭān Abu'l Ghāzī Abd al-ʻAzīz Bahādur Khān as the author states in the preface :—

العبد المذنب الخايف الباكي محمد ابن علي النويداكي ...... که دران زمانکه بمطالعهٔ رسالهٔ شريفه نادر العصر ...... امير حسين نيشاپوري اشتغال مي نمود - بعضی از نکات و فوايد در تحقيق مفهومات اعمال معمای و کيفيت استخراج اسامي از معمات و ساير مواضع آن رساله بخاطر مي رسيد و بعد از مذاکره با جماعتی از فضلا که درآن زمان درين فن سمت اشتهار داشتند هرچه از محک اعتبار ايشان کامل العيار برون مي آيد بر اوراق و اجزا تسويد

می یافت و مدت مدید بود که جمعی از اخوان صفا و خلان وفا که بمطالعه
این رساله مشغوف بودند مرة بعد اخری مبالغه و الحاح می نمودند الخ -

See Messrs. Ross and Browne's *Catalogue*, p. 150.

It seems that the MS. was written in the author's life-time.

Written in old minute Ta'līq. Text written with rubrications.

Beg. :— بعد از تنصیص تسمیه و تخصیص ائمه ممالک الملکی که
ذات بیمثالش

293.

گوهرستان

A commentary upon the versified treatise on logogriphs of Mīr Ḥusayn of Nīs͟hāpūr (d A.H 904 = A.D. 1498).

Commentator :—K͟hwājgī al-Balk͟hī, poetically called "*Nāmi*" See *H. K͟h*, Vol. V, p. 639.

Written in Ta'līq. Dated A.H. 1267 = A.D. 1850

Scribe :—'Abd al Raḥmān of Rāmpore

The MS is full of clerical mistakes.

Beg. :— حمد نا محدود کاملی را که معمای حقیقت ذاتش مبرّا
از تشبیه

(R. S. Lib.)

XXXI.

PHILOLOGY.

294

ام المحاوره

A very modern but interesting dictionary of such Arabic and Persian words which have no dots, e.g. مالک - احمد - احد etc., explained in Persian, by Aḥmad Ḥusayn, composed in A.H. 1321.

Written in Ta'līq. Dated A.H. 1321 = A.D 1903. Another autograph copy of the same is preserved in the Muradabad Lib. I met the author at Rampore during my tour.

Beg. :— حمد کامل مر مالک الملک را الخ

(R. S. Lib.)

295.

انیس الشعراء

A long list of two hundred and seventy words used by the best Persian poets in their works, illustrated by extracts from the best authorities.

It was compiled by 'Abd al-Karīm B. Qāḍī Rājan of Himyarpūr, and not by Aḥmad Khān as wrongly mentioned in the *Bodl. Lib. Cat.* No. 1405 (by Dr. Ethé); composed in A.H. 998 = A.D. 1589 at the desire of Aḥmad Khān B. Shīr Khān Turkamān, and not 'Abd al-Karīm B. Qāḍī Rājan as mentioned in the *Bodl. Lib. Cat.*

The date of composition (998 A.H. = 1589 A.D.) appears from the following verses :—

اں نسخۂ عجیب بصد خوبی کلام
در سال نہصد ونود و هشت شد تمام

Written in Ta'līq. Dated A.H. 1224 = A.D. 1809.
Scribe :—Abd al-Ghanī of Shāhjahānābād.

Beg. :— سپاس بیقیاس مرمتکلمی را کهٔ طوطي زبان را الخ -

(R. S. Lib.)

296.

بہار عجم

A well-known comprehensive dictionary of words and idioms used by ancient and modern Persian poets. Compiled after 20 years' labour, by Munshi Lālā Rāi Tik Chand, with the Takhallus "*Bahār*" of Delhī. (The work is not rare, but derives an interest from the fact that the valuable marginal notes were written by Sirāj al-Dīn 'Alī Khān "*Ārzū*"[1] (d. A.H. 1169 = A.D. 1755) himself in the space of a year.

Transcribed from the author's copy.

Scribe :—Shanker Lāl, clear Nasta'līq. Dated A.H. 1154 = A.D. 1741

Beg. :— سپاس و ستایش دانندہ را الخ

(Alī Ḥusayn Lib., Lucknow.)

---

[1] Sirājal-Dīn 'Alī-Khān *Ārzū*, a well-known Persian and Hindustānī poet, a nephew of the famous saint Naṣīr al-Dīn Chirāgh-i-Delhī. For his life see *sarv-i-Āzād*, p. 143. For another autograph of *Ārzū* is written on *Kalimāt al-shu'arā'*, by 'Abd-Allah Khān *Zakhmī*, which is preserved in the Niẓām Lib., Hyderabad. The *Kalimāt al-Shu'arā'* formerly belonged to the Lib. of Sīrāj al-Dīn 'Alī Khān *Ārzū*.

I am informed that another autograph copy entitled *Majma'al-Nāf'is* مجمع النفایس composed by him is in the *O.P. Lib.* (Bankipore).

There is another copy of the *Majma'al-Nafā'is* [مجمع النفایس] in the *Govt. collection A.S.B.* which is not entered in the *Catalogue*.

297.

حل لغات الشعر

A Persian dictionary, explaining the difficult words used in the قصاید سلمان ساوجي and in the poems of other distinguished Persian poets, compiled by the order of Amīr Sayyid Maḥmūd, known as Shaykh Mubārak (مبٰرک) al-Nūrānī (?). Arranged in alphabetical order.

Written in Ta'līq. Dated Dewgaṛh A.H. 1166 = A.D. 1752.

Beg. :— جواهر زواهر مقامی که جوهریان بازار معاني از معدن ادراک سخن - الخ

(Ahmad-Allāh Lib., Murādābād.)

298.

رساله در تعریب

An autograph treatise on the Persian words naturalised in the Arabic tongue.

Author :—'Abd al-Jalīl Bilgrāmī[1] (d. A.H. 1138 = A.D. 1725). For author's life see *Ma'āthir al-Kirām* of Mīr Ghulām 'Alī *Āzād*, pp. 257-276, who was the son of the author's daughter.

---

[1] Bilgrām is known as the birthplace of many literary men, and it was a well-known seat of learning. Formerly there were many valuable libraries but they are now lost. The same author 'Abd al-Jalīl had a very nice library and many autograph copies were in it. He was also a very nice calligrapher, as appears from *Ma'āthir al-Kirām* (Hyderabād) by Ghulām 'Alī *Azād* Bilgrāmī, p. 257 :—

کتاب خانهٔ عظیمی در زمرهٔ باقیات صالحات گذاشته اند اکثر این کتاب را بدست مبارک خود اصلاح و مقابله نموده اند و نسخ بسیار بخط خاص نوشته اند در اوایل خط نستعلیق بغایت شیرین مي نوشتند و نسخهٔ دلایل الخیرات که وظیفه خاص بود بدست مبارک خود تحریر نمودند و امروز این نسخه موجود است -

Shāh Ṭayyib Bilgrāmī (d. A.H. 1152 = A.D. 1739) had also a big library :—کتب خانهٔ عظیمی از خط خوش نمط یادگار گذاشت. (See *Ma'āthir al-Kirām*, p. 53.)

Mīr Sayyid Mubārak 'Alī Bilgrāmi (d. A.H. 1115=A.D. 1703) had also a big library. (See *Ma'āthir al-Kirām*, p. 98.)

Mīr Sayyid Aḥmad B. Sayyid Budh (d. A.H. 1117=A.D. 1705) and Mīr Sayyid Aḥmad B. Sayyid 'Abd-Allah (d. A.H. 1096 = A.D. 1684) both had good libraries (see *Ma'athir al-Kiram*, pp. 104 and 254, for them).

Shaykh Kamāl B. Shaykh Mukarram Bilgramī was alive in A.H. 994 = A.D. 1585, and had a big library. (See *Ma'āthhir al-Kirām*, p. 329.)

I am informed that Ghulām 'Alī *Azād* Bilgramī (d. A.H. 1200 = A.D. 1785) had a very valuable library containing 25,000 Arabic and Persian MSS. and books.

Written in Nasta‘līq.

Beg. :—الحمد لله - اما بعد چون الفاظ معرب در قرآن حدیث - الخ

(‘Alī Husayn Lib., Hyderabad.)

299.

قوة الكلام

A dictionary of Arabic words, with Persian and Hindī equivalents by Aḍud al-Dīn Md. B. Shay’kh Ḥāmid of Amrūhah. It is divided into 15 chapters and subdivided into many *Faṣls*.

Written in clear Ta‘līq. Undated.

Beg. :— الحمد لله الذي علم الانسان ... كه چون بعض الفاظ غير متعارف الخ

(R. S. Lib.)

300.

کنز الفنون

A metrical Arabic and Persian vocabulary, by an anonymous author.

Written in Ta‘līq.

Beg. :— شکو خدا کز کرم و لطف آن چند لغت چون درر نظم دان

(R. S. Lib.)

301.

مراة الاصطلاحات

A Persian dictionary, explaining the Persian phrases, illustrating them by their examples. Arranged alphabetically.

Author :—‘Anbar Shah Khān, poetically called “*Āshuftah.*” He died at Murādābād after A.H. 1237 = A.D. 1821. For his life and his works see *Intikhāb Yādgār* of Amīr Mīnā’ī, p. 4. Composed in A.H. 1234 = A.D. 1818. The MS. is incomplete up to ش.

Written in Shikastah.

Beg. :—شرف اقنیهٔ جلیه که مقاویل لسن بلغای دهور و اعصار الخ

(R. S. Lib.)

XXXII.

GRAMMAR.

302.

تشریح نادر

An excellent Grammar containing a full explanation of all the parts of speech, etc., etc.

Author :—Mīr Ḥusayn Dūst (of Sanbhal) B. Mīr Abū Ṭālib Dānishmand.

The date of composition as appears from the chronogram تشریح نادر and بیاض نشاط is A.H. 1173 = A.D. 1759 as given in the
۱۱۷۳ ۱۱۷۳
MS. in fol. 3^a. For another copy see *Catalogue of the Arabic and Persian MSS. in the Lib. of the Calcutta Madrasah*, p. 104.

Written in Ta'līq, dated A.H. 1251 = A.D. 1835.

Beg. :— سپاس بیقیاس مصنفی را که نسخهٔ مفردات حروف الخ

(R. S. Lib.)

XXXIII.

303.

نقود الصرف

A treatise on the conjugation of the regular Arabic verbs, containing paradigms of all their tenses and moods with a Pers. introduction and detailed Pers. paraphrases, by Sayyid Md. Walī-Allāh B. Sayyed Aḥmad 'Alī of Farrukhābād. Composed in A.H. 1216 = A.D. 1801. For author and his another work see *Tārīkh-i-Farrukhābād* (تاریخ فرخ آباد) and *Br. Mus. Pers. Cat.*, p. 959.

Written in usual Ta'līq. Dated A.H. 1264 = A.D. 1847. Some folls. are injured.

Scribe :—Md. Amīr of Fatḥpore.

Beg. :— الحمد للّه الذي ابواب رحمة العامة مفتوحة على
العالمين - اين بنده كثير الباع قليل المتاع محمد ولي الله فرخ آبادي الخ -

(R. S. Lib.)

XXXIII.

PROSODY.

304.

كتاب قوافي

An autograph[1] treatise on prosody.

Author :—'Aṭā-Allāh al-Ḥusaynī,[2] (d. A.H. 926 = A.D. 1519), author of *Rawḍat al-Aḥbāb*. The *Rawḍat al-Aḥbāb* was compiled at the requost of Mīr 'Alī Shir Nawā'ī[3] (d. A.H. 906 = A.D. 1500).

Written in fine Nasta'līq. Dated A.H. 925 = A.D. 1519.

Beg. :— سپاس بيقياس صانعی را كه تاسيس بدايع مصنوعات الخ

('Alī Husayn Lib., Hyderabad.)

XXXIV.

LITERATURE, ETC.

305.

آداب عالمگيري

State papers, documents and letters written in 'Alamgīr's name, by Qābil Khān (d. A.H. 1072 = A.D. 1661) and collected by Ṣādiq Sirhindī[4] (d. A.H. 1129 = A.D. 1716). For details seo *Br. Mus. Pers. Cat.*, p. 399, and *India Office Lib. Cat.* No. 371.

---

[1] Another autograph copy entitled *Risālah fī 'Ilm 'Uṣūl al Hadith* is preserved in the *A.S.B.* (See *Govt. collection*, part II. p. 2, No. 25; *J.A.S B*, Feb. 1910, Vol. VI, p. xxix.)

[2] For 'Aṭā-Allāh's life see *Ḥa'bīb' al-Siyar*, Vol. III. part III, pp. 335 and 318, and *Br. Mus. Persian Cat.*, p. 147a.

[3] Mīr 'Ali Shir was a celebrated literateur. He had a very big and valuable library. In A.H. 904 = A.D. 1491 he appointed Khwandamīr, author of *Rawḍat al-Ṣafā*, superintendent of his library, where he compiled *Khulāṣat al-Akhbār* as he says:—

تا در سال نهصد و چهار از هجرت نبي صلی الله عليه و سلم از هر كتابی كه مشتمل بر فن تواريخ و اخبار بود در كتابخانهٔ معمورهٔ آنحضرت موجود بود - تسليم اين بی بضاعت نمودند و بمطالعهٔ آنها رغبت و تحريص فرمودند - و من بندة چون بران مقدمات فصاحت آيات بگذشتم الخ

(See *Khulāṣat al-Akhbār* (MS. copy *A.S.B.*), fol. Ib, *Elliot Bibl. Index* I, p. 103, and *Morley Cat.*, p. 39.)

Many learned calligraphers were employed by him for his library, such as Sulṭān 'Alī Mashhadī (d. A.H. 919 = A.D. 1513), Sulṭān Md. Khandān, 'Alā'al-Dīn Md., Sulṭān 'Alī Shīr Mashhadī, Zayn al-Dīn, etc. (See *Khulāṣat al-Akhbār* (MS copy *A.S B*), folls 369-370.)

[4] For Sirhind see *J.A.S.B.*, July and Aug 1914, p. 281.

It appears from a marginal note at the end that this copy was corrected and collected by the author himself :—

از اول تا آخر مصنف خود مقابله نموده و صحیح کرده و خارجه ها را خود نوشته

Written in fine Ta'līq. The first two pages are written within gold lines. Illuminated frontispiece.

Scribe :—Khwājah Md. Mukhtār B. Khwājah Muḥammad Ṣalāḥ al-Ghūrī al-Ḥanafī. Dated A.H. 1120 = A.D. 1708.

Beg. :— خداوند علیم حکیم - خرد بخش سخن آفرین را بکدام مرتبه سخنوری الخ

(R. S. Lib.)

306.

ارشاد الممتاز

An extensive commentary upon *I'jāzkhusravī* (اعجاز خسروی), a well-known work of خسرو دهلوی (d. A.H 725 = A.D. 1324) on Inshā by Khayālī Rām, composed at the request of M. Iḥsān-Ullāh *Mumtāz* according to the following chronogram A.H. 1253 = A.D. 1837 :—

شد رقم ختم و هرکه کردش سیر   گفت تاریخ آن اتم بخیـــر
۱۲۲۵

in the time of Md. 'Alī Shāh, king of Oudh (A.H. 1252-1258 = A.D. 1810-1842). The work is divided into five sections called Farhang.

Written in usual Tālīq. Some folls. at the beginning of the preface are wanting.

Beg. :— هذا الکتاب بفضل الله ذی الکرم الخ

(R. S. Lib.)

307.

بهار عنبر

A collection of letters by 'Anbar Shāh Khān of Rāmpore who died at Murādābād after A.H. 1237 = A.D. 1821. See for his life and other works *Intikhāb Yādgār* [انتخاب یادگار], p. 4. Compiled by Munshī Amīr Mīnā'ī. The author composed this work for his brother 'Abbās in A.H. 1232 = A.D. 1816, as appears from the chronogram :—

چون این بهار عنبر معنی اساس را   صورت نمود مرغ هنر جوهر کمال
بهر شمار مدت انجام نیک او   بیرون کشید لفظ بد از مظهر کمال
۱۲۳۲

Two copies of this work, one of which is an autograph, are preserved in the Nawāpāṛā Lib. at Murādābād.

Written in Shikastah. Dated A.H 1233 = A.D 1817.

Beg. :— رياحين ستايش كه شايان هدنه - الخ

(R. S. Lib.)

308.

پنج گنج

A work on epistolography by 'Anbar Shāh Khān (d. c. A.H. 1238 = A.D. 1822). It is divided into 5 (گنج). This copy was written by the author himself as mentioned at the end :—حرره العاصي مخذول العصيان مملو المعاصي عنبر شاه خان سنه ١٢٣٥ هجري

Written in Shikastah.

Beg. :— انتخاب قد وعدائي سخن در حديق لخ

(R. S. Lib.)

309.

چمنستان

A work on epistolography by Anand Rām '*Mukhliṣ*'[1] (d. A.H 1164 = A.D. 1750). The work is divided into 4 (چمن). For author and his other works see *Br. Mus. Per. Cat.*, p 997ᵃ.

Written in Ta'līq. Dated A.H. 1260 = A.D. 1844.

Beg. :— بعد رنگا رنگ آرایش چمنستان حمد و ستایش او تعالی شانه

(R. S. Lib.)

310.

غزلان الهند

A work on Persian literature, by Mīr Ghulām 'Alī Āzād Bilgramī (d. A.H. 1200 = A.D. 1785). (Composed in A.H 1177 = A D. 1860. Compare *Br. Mus. Pers. Cat.*, p. 978ᵃ.

Written in good Nasta'līq. Dated A.H. 1220 = A.D. 1805.

Beg. :— سر آمد مستحسنات کلام ستایش صانعی که خلوتکدهٔ تنزیهي - الخ

(M. 'Alī Ḥusayn Lib., Hyderabad.)

---

[1] For Anand Rām and his another work see *mukhlis* No. 260.

311.

کشکول

Collections of Persian, Arabic, Turkī and Bhākā literature by Sayyid Md. Bilgramī (d. A.H. 1185 = A.D. 1771). For author's life see *Yad-i-Bayḍā* and *K̲h̲izānah-i-ʻĀmirah.*

Written in S̲h̲ikastah-Āmīz Taʻliq. Autograph copy.

Beg. :—

(M. ʻAlī Ḥusayn Lib., Hyderabad.)

312.

گلدستهٔ اندیشه

Letters and other compositions, by Md. Amīn al-Wiqārī-at Ṭibsī (?). It is divided into 12 (درگ) as follow :—

(۱) در دیباچها (۲) در نکاح نامجات و امثال آن (۳) مستشهدات
و محضران (۴) نوشتجات ببادشاهان (۵) در مکاتیب (۶) در جواب
مکاتیب (۷) در تهنیت منصب و مولود وغیرها (۸) در تعزیت (۹) مکاتیب
و عرایض که از زبان دیگران یاد داشته شده (۱۰) رقعات که بهرکس نوشته
شده (۱۱) مکاتیب معشوق (۱۲) نوشتهای ظرافت آمیز-

Written in usual Taʻlīq.

Beg. :— نخستین غنچه که از گلبن خامهٔ دبیران سخن پرواز
گلشن راز شگفتن آغاز نماید

(R. S. Lib.)

313.

گلستان

Written by the well-known calligrapher ʻAbdal-Ras̲h̲īd Daylamī[1] of S̲h̲āh Jahān's Court, transcribed from the copy written by the famous calligrapher Mīr 'Imād (d. A.H 1024 = A.D. 1615; see for his life No. 104, footnote) which was transcribed from the author's copy as mentioned in the following note at the end :—

---

[1] ʻAbd al-Ras̲h̲id Daylamī, better known as Āqā Ras̲h̲īd, was a tutor of Dārā S̲h̲ikuh. (See my *Pers. Notes* No. 104) A Ras̲h̲īd Daylamī died in A.H. 1081 = A.D. 1670, as appears from the following chronogram of Saʻīd As̲h̲raf :—

گفتم از ارشاد پیر عقل در تاریخ آن   بود باهم مردن آقا رشید و صایبا
۱۰۸۱

For details see my *Pers. Notes* (No. 104).

The author of *Tārīk̲h̲ Muḥammadī* gives his date of death A.H. 1085 = A.D. 1674 (see *Br. Mus. Pers. Cat.*, p. 1094^b).

There are other autograph copies of the same calligrapher entitled *Sūrugudāz* سوز و گداز and *Farhād S̲h̲īrīn* [فرهاد شیرین] in the *Bodleian Library Cat.*, nos. 1064, 1068.

و هي النسخة لأوله بخط المصنف عفي الله تعالى عنه يوم السبت فى
العشر الآخر من محرم سنه اثنين و ستين و ستمائة يوم فتح شيراز و انتقال
الملک من آل سلغة الى غيرهم - بتاريخ هفتم شهر رمضان المبارک مطابق
سنه هجري در نواحي بيجاپور ——— كه لشكر ظفر پيكر عالم گيري خلد الله
ملكه و سلطنته ——— اين نسخه شريف را فقير حقير محتاج ———
از نسخه منقول خط استاد الزمان مير عماد منقول ——— بجهة يادگاري نقل
نمود -

Some mischievous hand has erased the words after منقول. First two pages are written within gold lines. 'Unwan illuminated. Gold-ruled borders.

(R. S. Lib.)

31.

مرأة تحير

A work on ornate prose, by Sīl Chand, poetically called "*Tamīz*" [تميز]. Composed at the request of his brother Lālā Gulzār Sīl with the takhallus "*Gulzār*" [گلزار] in A.H. 1249 = A.D. 833. The title is a chronogram for A.H. 1248 = A.D. 1832. It is divided into two chapters :—

اول در بيان واقعاتيكه فى الواقعه بچشم خود موافق معاينه افتاده
دوم محتوي بر ديباچهاى كه در اكثر كتب از قلم طراز تحرير در داده -

Written in elegant Neem Shikastah. Dated A.H. 1249 = A.D. 1833 The author was very well skilled in writing fine Nasta'līq. I have seen a good many *Muraqqa'* [مرقع] of his hand in Lucknow during my tour.

Beg. :—خداوندا قلم آشفته سراى تميز هرزه و را مقطوع اللسان الخ

(R. S. Lib.)

XXXIV.

PROVERBS.

315.

عجايب الامثال

A collection of Persian proverbs by Md. 'Alī Jabal Rūdī (d. c. A.H. 1054 = A.D. 1644). The work is divided into 27 *Faṣls*.

Two copies of the work entitled *Jāmi'al-Tamt͟hīl* [جامع التمثيل] are mentioned in *the Br. Mus. Pers. Cat.*, p. 773, and *Ind. Off. Lib Cat.* No. 2209. The beginning of the MS. given by Dr. Rieu does not tally with the present MS.

Written in Ta'līq. Not dated.

Beg. :—غازهٔ پیرایه رخساره شاهد کلام بحمد خالقیست که ذات الخ

(R. S. Lib.)

NOVEMBER, 1918.

The Monthly General Meeting of the Society was held on Wednesday, the 6th November, 1918, at 9-15 P.M.

H. G. GRAVES, ESQ., A.R.S.M., in the chair.

The following members were present :—

Mr. E. Brunetti, Mr. H. C. Das Gupta, Rev. E. Francotte S.J., The Hon. Mr. F. J Monahan, I.C.S., Dr. Satis Chandra Vidyabhusana, Mr. E. Vredenburg.

The minutes of the August meeting were read and confirmed.

Sixty-three presentations were announced.

The General Secretary reported that Dr. H. M. Crake and the Hon. Mr. Surendra Nath Roy had expressed a desire to withdraw from the Society.

The General Secretary also reported that the following gentleman was elected ordinary member during the recess in accordance with Rule 7 :—

Prince Victor N. Narayan of Cooch Behar.

The Chairman announced that in accordance with Rule 38, the names of Babu Vereshwar Bhattacharjee of Navadipa and Maulavi Q. Fazli Haque of Lahore had been posted as defaulting members since the last meeting, and their names have now been removed from the member list.

The Chairman announced that there would be no adjourned meeting of the Medical Section this month.

The following papers were read :—

1. *Dacca Diaries, Part III.—By* J. T. RANKIN.

This paper will be published in a subsequent number of the *Journal*.

2. *Two remarkable letters recovered from Tibet.—By* DR. SATIS CHANDRA VIDYABHUSANA.

3. *The occurrence of* CYPRŒA NIVOSA *Broderip, in the Mergui Archipelago.—By* E. VREDENBURG.

This paper will be published in a subsequent number of the *Journal*.

4. *Review of Progress in our Knowledge of Oriental Diptera during the last two decades.*—*By* E. Brunetti.

[Read at the Fifth Meeting of the Indian Science Congress.]

The publication of Van der Wulp's Catalogue of the Diptera of South Asia in 1896 marked an epoch in our knowledge of oriental diptera, since which our progress can be measured from time to time. Seven years ago I offered an abbreviated resumé of what had been done up to that date,[1] and the present article is an attempt to recapitulate more fully and bring the information as nearly up to date as possible.

Numerous valuable papers treating of oriental diptera have appeared during the last twenty years and notice may be made of the following without any intention of undervaluing those that may, from oversight, be omitted.

Dr. Annandale has described a very interesting and exceedingly minute insect *Rhynchomicropteron* and several new species of biting moth-flies (*Phlebotomus*) from India and Ceylon as well as a new genus in *Psychodinae*, which he has done me the honour to name after me, *Brunettia*. Mr. E. E. Austen, of the British Museum, has written two papers on the connection between big game in Africa, tsetse flies and sleeping sickness, which are of consummate interest in spite of these flies not occurring in the East. Father Assmuth contributes to our knowledge of the Termitophilous Phoridae. Dr. Alcock's "Entomology for Medical Officers" is one of the best works of its nature. Prof Bezzi in two "centuries" of Philippine Diptera[2] introduces several new species and recognises many of those of the older authors. He has also monographed the Indian species of *Trypetidae* or fruit flies in the Memoirs of the Indian Museum III; and furnished an important second article on them in the Bull. Ent. Res., and he has also written up the *Leptidae* and *Empidae* of Formosa in three papers.

Dr. de Meijere, principally in the Dutch Tijd. voor Entom., gives us eleven very valuable and carefully compiled papers chiefly on Javan diptera, but including a good number of species from New Guinea, Sumatra, and a small adjoining island Simalur, and occasionally from other parts. His concise descriptions total several hundred, and many of the older authors' species are redescribed, the plates accompanying the text being excellent. One of his papers revises the *Sepsinae*, and another in conjunction with Dr. Becker treats of the *Chloropinae* of Java. Mr. F. W. Edwards, in some pithy papers on *Culicidae*, renders yeoman service in reducing a large number of alleged species in this family to synonymy and also contributes a few pages of valuable synonymy in other groups of Nemocera.[1] Mr. A. D. Imms, Forest Zoologist, supports the affinity of the *Corethrinae* with the *Culicinae* and insists, as all systematic entomologists have done, that they form a single family. Major James supplies a new arrangement of Indian *Anophelinae* and Dr. Enderlein and Prof Hermann have separately contributed to our knowledge of the *Asilidae*.

---

[1] Jour. Asiat. So. Beng. VI, 135 (1910).

[2] Published in Phil. Jour. Science, VIII, 305 (1913), and IX, 107 (1917).

Prof. Kertesz has worked out the species of *Sapromyza* found in Formosa, New Guinea and Ternate, also describing three new Syrphids. He has monographed the genus *Evaza* (*Stratiomyidae*), and revised the *Pipunculidae* of South Asia and New Guinea besides describing a certain number of new species in various families.[2] Prof. Kieffer in his work on the *Cecidomyidae*, notes all the oriental species.[3]

Messrs. Lefroy and Howlett are responsible for a very bulky popular book entitled "Indian Insect Life" liberally illustrated with figures and coloured plates.

The chief work by Dr. Leicester has apparently been overlooked by many, even by those specialising in mosquitoes. This is a voluminous treatise on the *culicidae* of the Malay States[4] in which all the known species are very minutely described. Miss Ludlow has supplied various short papers on Philippine Mosquitoes.[5]

Mr. Mitter gives us the life-histories of two blood-sucking muscids, *Haematobia sanguisugens*, Aust. and *Bdellolarynx sanguinolentus*, Aust., and notes the occurrence at Kasauli and breeding place of an allied blood-sucking muscid, *Stygeromyia maculosa*, Aust.

Captains Patton and Cragg have issued an excellent textbook on Medical Entomology and have studied the life-history of *Philaematomyia insignis*, Aust. and note some haematophagous species, also giving descriptions of two new species of *Musca*, and one of *Philaematomyia*. Mr. C. Paiva, of the Indian Museum, supplies some interesting notes on *Aedeomyia squammipenna*, Arrib. and on the larva of *Toxorhynchites immisericors*, Walk., one of the largest and most brilliant of oriental mosquitoes. In Miss Ricardo's two long articles on *Tabanidae*, much valuable information is found, and keys to a large number of species given. It is to be hoped that the remainder of the oriental species will be equally well dealt with. Prof. Speiser gave preliminary descriptions of three new Indian *Nycteribiidae* (bat parasites) but I have seen no fuller descriptions yet, though he has described other new species both in this family and in the *Hippoboscidae*.

---

[1] Mainly in Ann. Magaz. Nat. Hist. and Bull Ent. Res. from about 1911 onwards.

[2] Most of his papers appear in the Ann. Mus. Hung.

[3] Genera Insectorum, Fasc. 152 (1913).

[4] Studies Inst. Med. Research Fed. Malay States III (1908).

[5] In various American journals.

Mr. S. K. Sen publishes a preliminary note on the role of blood in ovulation in Culicidae The first paper by Mr. C. H. T. Townsend on the true muscids in the Indian Museum has just appeared, and others will follow in due course. As the leading living authority on the higher *Muscidae* his papers will be eagerly looked forward to. Mr. F. V. Theobald's writings on *Culicidae* are too well known to need mention or praise here, for although a good proportion of his species have since been declared invalid, much remains of his laborious monographic work which will always stand to his name as a pioneer in this Family.

As regards my own work I can only briefly note having compiled papers on the *Stratiomyidae* (a second in preparation), *Syrphidae* (two), *Leptidae* and *Bombyllidae* (three), *Empidae*, blood-sucking *Muscidae*, *Sepsinae*, *Tipulidae* (a second just published), *Psychodidae*, *Nemocera* (certain families only) and general papers on ' New Oriental Diptera," " Diptera of the Abor Expedition," "New and interesting diptera from the Eastern Himalayas," and " Diptera of the Simla District." Also a Catalogue of Oriental *Culicidae*, with a Supplement and a Critical Review of genera in *Culicidae*

My first volume on diptera in the " Fauna of British India " series appeared in December 1912, containing all the Nemocera except *Cecidomyidae*, *Chironomidae* and *Culicidae*, over two hundred and fifty new species being described in it. A second volume, treating of certain families of *Brachycera* and *Cyclorrhapha* is in preparation A Catalogue of the Oriental Nemocera is in hand and approaching completion.

Comparative notes with our knowledge of 1896 may now be given under each family.[1]

Cecidomyidae.—Of gall gnats only three species appear in Van der Wulp, but about 30 are now known, mostly described by Kieffer. Some knowledge of botany being requisite for successful work in this family may be the reason why so few dipterologists have concerned themselves with it. The species are all very small and exceedingly fragile, and frequently cannot be identified without the life-history being known ; in fact a number of species have been set up on the lower stages only, the imagos not yet being known, and this practice should be, I think, rigidly condemned The species of the world are listed by Kieffer in the Genera Insectorum, Fasc. 152. Some notes are given by Mr. Y. Ramachandra Rao on gall flies on Indian grasses [1] and Mr. E. P. Felt has described a few new Indian species sent him by Mr. T. Bainbrigge Fletcher.[2]

---

[1] Van der Wulp's Catalogue (1896) and my previous paper on this subject (see footnote 1) may be referred to. It is impossible to give here references to all the new species described since Van der Wulp's Catalogue as it would occupy far too much space, and the present paper is merely a review, not a catalogue. References, therefore, to only the principal or more lengthy papers are offered. It may be taken that my volume on the Fauna of British India contains practically all the Indian species of Nemocera known at that date (1912) exclusive of those in families not dealt with in that volume (*Cecidomyidae*, *Culicidae* and *Chironomidae*). The Nemocera comprise all the families in the present list from *Cecidomyidae* to *Rhyphidae*, both inclusive. All the papers written by me, with one or two minor exceptions, are published in the Rec. Ind. Mus. from 1908 onwards.

In cases where certain groups have been thoroughly revised up to a recent date, such as the fascicules of the "Genera Insectorum," full references will be found therein. Short papers by various authors on various groups appear from time to time in the " Nova Guinea Results."

Mycetophilidae —Fungus gnats. Van der Wulp gave 23 species and but few have been described apart from the 110 set up by me in the first " Fauna " volume These include 38 species of *Sciara*, which group I decline to regard as a separate family.

Blepharoceridae.—Of this very interesting family only one. *Hammatorhina bella*, Loew. from Ceylon was known till comparatively recently, but three others have lately been described, and Mr. Agarkhar has written on the Kashmir species. Kellogg reviews the world's species in the " Genera Insectorum " Fasc 56 (1907).

Bibionidae.—33 species now known Some species may be taken in immense numbers for a few days, especially in spring, after which they may not be seen again all that season. The only personal instance of this was at Darjeeling when *Bibio obscuripennis*, de Meij. was exceedingly abundant for a few days about Oct. 16th, 1905.

Simuliidae.—A family of economic importance, as some species bite viciously, especially in the hills, where they are sometimes far from uncommon. The Indian species were tabulated by me twice,[3] but are not at all well known. *Simulium indicum*, Becher is probably the commonest and was the first described from the East (Assam), also the only one known to Van der Wulp. One species occurs as far south as Ceylon (*S. striatum Brun.*) [4] and one in Java (*S. nobile* de Meij.).

Chironomidae.—A vast advance has been made in this family, of which only 15 were known up to 1896. The extensive collection of the Indian Museum has been worked out by Kieffer (although additions have since accumulated), and the results published in several papers in the Rec. Ind Mus with a 60 page treatise in the Memoirs of the same Institution.[5] There are 340 now known from the East, almost wholly from India, quite possibly not a fourth or a fifth part of those actually existing here, to say nothing of the remaining parts of the orient.

---

[1] Jour. Asiat. So Beng. n. s. XIII, p. clxxxiv (1917). The species are described by Felt in the Ent. News, XXVIII, 73 (1917).

[2] Canad. Entom. XLVIII, 400 (1916).

[3] Rec. Ind. Mus. IV, 282 and " Fauna."

[4] Spol. Zeyl. VIII, 90 (1912).

[5] Kieffer ; Gen. Ins. Fasc. 42 (1906) ; Rec. Ind. Mus. IX, 119 (1913), VI, 113 (1911) : VI. 319 (1911) : Mem. Ind. Mus. II, 181-(1910).

Culicidae.—Probably no family in the whole of the diptera has been so extensively collected throughout the world and so assiduously worked at as this one, since the connection between these insects and malaria was discovered only a few years ago. This discovery brought a number of workers into the field with little or no previous systematic knowledge of diptera, with the inevitable result that large numbers of genera and species were created on minute and inconstant differences in a flood of literature. The names of the principal workers need not be recapitulated as they are well known.

One or two systematic dipterologists (Williston, Edwards, myself and others) pointed out the fallacy of erecting genera and even subfamilies on characters of slight taxonomic value, my own efforts in this direction consisting of a paper on "Taxonomic values in *Culicidae*"[1] and a "Critical Review of genera in *Culicidae*."[2] In the latter I have ventured to sink wholesale a large number of the genera, whilst Edwards has done the same with regard to the species, including the annihilation of the so-called subfamily (*Heptaphloebomyinae*) which was actually built up on a single (supposed) species which was afterwards found to represent the ♂ and ♀ of two different species, both originally described by the author of the alleged subfamily. Anyway, the headlong flow of new species seems to have been stemmed.

In the Catalogue of Oriental Nemocera which I have now in hand, some 360 species of *Culicidae* will be recognised, not because they are all valid, but because the systematists have not yet had time to overhaul them. When this has been done. the species may well be reduced to two-thirds of that number or even to half.

Dr. Leicester's voluminous treatise on the Malayan species has been generally overlooked but much care and time have evidently been spent on it.[3]

As was foreseen by me in the early days of the rush on species making most authors are content nowadays to refer the bulk of the Anophelines to the genus *Anopheles*, and a large proportion of the Culicines to *Culex*, though of course a certain number of quite good genera exist in both groups. The new genera had been made so unrestrainedly that they soon overlapped one another, and the more species there were discovered the sooner it became obvious that such genera were wholly artificial.

The numerous papers by Theobald are too well known to culicidologists to need mention, but his elaborate Monograph of the Culicidae of the World[1] will long be the standard work on the family. Major James has recently offered a "new arrangement of the Indian Anophelinae"; Mr. Paiva, of the Indian Museum, has published notes on *Toxorhynchites immisericors* and *Aedeomyia squammipenna*, including the habits of the larvae of the former species; Mr. Sen has contributed notes on the role of blood-sucking in ovulation in this family and various shorter papers have appeared from the pens of other writers.

---

[1] Rec. Ind. Mus. IV, 53 (1910).

[2] *Id.* X, 15 (1914).

[3] Published in "Studies from the Institute for Medical Research, Vol. III (1908).

The *Corethrinae* cannot be separated from the *Culicidae*, as those whose only knowledge of diptera is confined to mosquitoes would wish (possibly because they are of no economic interest), and their affinity has been shown recently in the larval as well as the adult structure by Dr. Imms.[2]

Psychodidae.—This small group of moth-like flies has only attracted attention of recent years so far as the eastern species go. Dr. Annandale has indited several short papers on the *Phlebotominae* of India and Ceylon and described some new species and varieties. I have dealt with this family on three occasions.[3] Forty species occur in the East.

Dixidae.—Only the five species introduced by me in 1911 are known.

Tipulidae.—With the exception of the *Culicidae*, undoubtedly a larger proportion of new species have been described in this family than in any other, but whereas a considerable number of those in the former family have proved invalid, the bulk of the *Tipulidae* will probably prove valid. Van der Wulp listed 140 in 1896 and in my first paper on the family[4] 53 new ones were added, to which a further contribution of no less than 140 was made in the "Fauna" volume, whilst in a second paper just published are descriptions of over 70 additional species. The great majority of my species are from India. Dr. de Meijere has instituted a good number from Java, Sumatra and elsewhere, totalling about 60 altogether. Amongst other authors Alexander has described a few from Java,[5] Edwards from Formosa, and Enderlein from Sumatra and other eastern localities. The number now known is just under 600

Rhyphidae.—Eight species from the East are known.

N.B.—In comparison with my tabulation of species in families in my first Review (p. 137) the following figures may be noted, representing approximately the number of species in each family now known (including the 70 new *Tipulidae* of the second paper just issued). *Cecidomyidae*, 30; *Mycetophilidae*, 70; *Blepharoceridae*, 4; *Bibionidae*, 33; *Simuliidae*, 14; *Chironomidae*, 340; *Culicidae*, 360; *Psychodidae*, 40; *Dixidae*, 5; *Tipulidae*, 600; *Rhyphidae*, 8; making a total of about 1,640 or nearly double the number known only seven years ago.

---

[1] Five volumes published by the British Museum, 1901-1910.

[2] Jour. Econ. Biol. VII (1912).

[3] Rec. Ind. Mus. II, 369 (1908); New Oriental Nemocera, *loc. cit.*, IV, 259 (1911), and in the "Fauna." Dr. Annandale's papers appear in the Rec. Ind. Mus. II, 101 (1908); IV, 353 (1908): IV, 35 (1910); V, 141 (1910); and Spol. Zeyl. VII, 57 (1910); VII, 187 (1911); VII, 203 (1911).

[4] Rec. Ind. Mus. VI, 231 (1911).

[5] Proc. U.S. Nat. Mus. XLIX, 157 (1915)

Coming to the Brachycera the results are not so striking in the aggregate, but there remains ample scope for further research in all the families.

Stratiomyidae.—Thorough revision is required here as badly as anywhere. Some of the genera appear unsound and many of Walker's specific descriptions, especially in critical groups such as *Sargus*, *Ptecticus*, *Odontomyia*, *Evaza*, etc., are unrecognisable, a large number of the species having been set up from one sex only and frequently from unique specimens, a good many of the types being no longer in existence. De Meijere has elucidated some of the older authors' species from Java. Only about 20 new species have been described since 1896 but in a second revision that I am attempting sixteen or more additional ones will appear.

Leptidae.—Only about a dozen or so new species have been added to this rather limited family but I have descriptions in MS. of at least as many again of undescribed species in the British Museum, Indian Museum and Pusa collections which will appear in the 2nd volume of the "Fauna" series. Bezzi has worked out the Formosan species.[1]

Tabanidae.—The very extensive family of gad flies is abundantly represented in the East. Van der Wulp's Catalogue contains close on 200, of which 150 belong to the gigantic genus *Tabanus*. There is still scope for much revisionary work here. Most of Bigot's species of *Atylotus* (sub-genus of *Tabanus*) do not belong there, in fact he failed to understand the sub-genus, as was the case in other instances, and many of his descriptions are as unintelligible as those of Walker's later days. A large proportion of the family has not been dealt with by Miss Ricardo though she has compiled two lengthy and very useful papers, one on *Tabanus* only and the other on the remaining genera, over sixty new species being included in them.[2] Studies and descriptions in this family must be, as Austen has stated, comparative, that is, differences from closely allied species must be noted. A collection of some size for continuous comparison is also a *sine qua nôn* for exhaustive work, also a complete library of all the described species of the region. Apart from Miss Ricardo's work practically nothing has transpired during the last two decades.

---

[1] Ann. Mus. Hung. X, 442 (1912).

[2] Rec. Ind. Mus. IV, III (1911); IV, 321 (1911).

Nemestrinidae—A most interesting family allied to both the *Tabanidae* and *Cyrtidae.* They inhabit hot, dry, sandy localities and frequently occur in the hills, hovering over paths and on the borders of woods, their movements in the air being made with lightning-like swiftness, making them exceedingly difficult to catch. Lichtwart reviewed the oriental species a few years back, establishing nine new ones, one of which, *Ceylonia magnifica.* I subsequently described again as new under the name of *Atriadops nivea*, from a specimen in my own collection, having overlooked Lichtwart's paper.

Cyrtidae.—A very peculiar and limited group of rather small, balloon-like globular flies that delight in hovering. Four new species have recently been added by me, whilst de Meijere has added one, and my second Fauna Volume will contain six more. Less than twenty altogether, including these latter, are known from the Orient.

Bombylidae.—Quite a number of these have been known from all tropical regions since the earliest days of collecting, owing to their size and the great beauty of many of the species Van der Wulp records about 100 though some of these have been proved invalid, and many of the remainder are unrecognisable through faulty or inadequate descriptions An attempt at revision was made by me in 1909, adding 18 new ones, but a critical study of most of the *Anthracinae* remains a *desideratum.* About a dozen new species will be described in my new Fauna volume, on specimens in the British Museum, Indian Museum and Pusa collections.

Therevidae.—An allied family to the previous one and one of the most difficult to deal with through the close affinity and variability of many of the species. Krober has written up the family for the Genera Insectorum[1] and referred some of the older species to different genera. Only half a dozen or so new species have been erected of late.

Scenopinidae.—This family was not known to occur in the East in Van der Wulp's day, but Becker has recently described a species from Luxor, and Kertesz one from Papua, whilst I have recognised the European *Scenopinus fenestralis*, L. in specimens from Simla, Kasauli and Naini Tal.

Mydaidae.—My three new species set up recently are the only additions to this very small but conspicuous group.

Asilidae.—Over 400 species were catalogued by Van der Wulp of the robber flies as they are sometimes designated. Much conscientious revision is requisite here, the specific and generic differences often being exceedingly intricate, based in one group on the macrochaetae, in another on the genitalia, and so on. Walker has as usual encumbered the literature with a number of species based on insufficient material, and Bigot has followed suit with equal vagueness. Van der Wulp, who was himself a specialist in the oriental species of this family, wrote a most useful paper in 1872 (unfortunately in Dutch),[1] but since then no serious attempt has been made to grapple with them.

---

[1] Fasc. 148 (1913).

He referred a number of Walker's species of *Dasypagon* to more recent genera, Enderlein having done the same as regards *Laphria*, which illustrates the specific invalidity attributable to most of the species outside those dealt with by the eminent Dutch author.

The Indian Museum and the Pusa Institute possess a large amount of material which I have arranged to work out as soon as the work already in hand is completed, and there are probably a hundred new species awaiting descriptions.

Enderlein, Hermann and de Meijere have each added some species but most authors have fought shy of plunging in this family until the ground has been to some extent cleared.

Empidae.—A bare dozen species were known in 1896 but though specimens as a rule are not numerous, a fair number of species exist in the East. Over 50 were described in my paper on the family in 1913; Bezzi[2] supplementing this with nearly 30 others, many being from Formosa and Papua; de Meijere and Kertesz having added a few each from Papua and Java.

Dolichopodidae.—Yet another family in a most unsatisfactory state. Van der Wulp devotes two and a half pages to *Psilopus*, about half the species being by Walker who is also responsible for the majority of the remaining thirty in the family, which is almost tantamount to saying that they are mostly unrecognisable, especially as many of the types are probably lost. Some years ago the Indian Museum collection in this family was sent to Lichtwart who replied that it was impossible to deal with it without first elucidating Walker's types. Since then nothing has transpired, but a further stock of specimens is accumulating. De Meijere has ventured to set up a score or so of new species, mostly in *Psilopus*, but except for a stray species or two the group has been assiduously avoided.

Lonchopteridae—Walker described a new genus and species which he doubtfully placed in this rather isolated family. Nothing definite about it has been published since, but I captured what appears to be a variety of the common European *Lonchoptera lutea*, Panz, at Darjeeling. De Meijere very kindly sent me some European specimens for comparison but the box was much damaged in the post, having been opened by the censor, and the specimens were useless. A beautiful new species has just come before me, captured by Mr. T. Bainbrigge Fletcher.

---

[1] Tijd. v. Ent. [2] Ann. Mus. Hung. X, 452 (1912).

Platypezidae.—A small family which, like the preceding one, has a venation all its own. Though I set up two new species of *Platypeza* I have since come to the conclusion that they are only *argyrogyna*, de Meij, and have a suspicion that this latter may only be *glaucescens*, Walk.

Pipunculidae.—Revised by Kertesz in 1903,[1] with the addition of six new species from Papua and Ceylon and two others at a later date. A second revision by me in 1912 with ten more, a variety of the common European *Pipunculus campestris*, Latr and the introduction of the European *Chalarus spurius*, Fall. Eight species have been described by de Meijere, one by Becker and one by Van der Wulp (the latter omitted by error from his catalogue. About 33 are now known, and six more are reserved for my Fauna volume.

Syrphidae.—This very extensive and beautiful family is well represented in all tropical regions, and the Orient possesses its full quotum. Known as sun-flies from so many species loving to hover in the sunshine, they are not of economic value but attract attention through their bright colours and ubiquitous nature. Van der Wulp catalogued about 250 species, of which some few must be struck out as synonyms.

Austen, Bezzi and Kertesz have added a few species each, but the great majority of recent species are due to de Meijere and myself, the former contributing about 90, whilst in my two papers I have added 78, and a few more will appear in the Fauna volume. The most difficult genera are *Baccha*, *Syrphus*, *Eristalis* and *Eumerus*.

Oestridae.—In this very small family the species known in 1896 have not been added to.

Muscidae.—As regards the enormous mass of the *Muscidae*, *sensu latissimo*, which I persist in regarding as a single family, vast fields await the patient and conscientious investigator.

Tachininae.—Amongst the calyptrate muscids, the *Tachininae* subfamily are large to rather small bristly flies with a powerful flight, mostly parasitic on lepidopterous larvae and their study will take many years to pursue as the species will certainly run into hundreds, owing to the wealth of lepidopterous life in the East. Almost the only serious worker in this group is Townsend.

The alleged genera run into one another in perplexing fashion and of two of the greatest recent exponents[2] Verrall, the late eminent British dipterologist wrote that he had never found any author's tables more difficult to follow than Brauer's, "except perhaps those of Brauer and Bergenstamm together." I remember many years ago asking Mr. Verrall if he would like to name about 70 British Tachinids of mine and he replied that he had not 70 but 700 awaiting identification. adding that he "could not get the hang of them at all." Van der Wulp occupies 20 pages of his Catalogue with the Tachinids, including *Dexia* and *Sarcophaga*, with their allies.

---

[1] Ann. Mus. Hung., I, 465 (1903).

[2] Brauer and Bergenstamm.

Muscinae.—Some effort has been made to cope with the next great natural division of the *Muscidae*, the true *Muscinae*. These include the common house flies, the blue and green bottles, the blow or meat flies, stable flies, or biting muscids (*Stomoxys*, *Lyperosia* and allies) with other species of less economic interest.

Though none of the species other than the Stomoxyini actually bite, there are some, like *Philaematomyia*, provided with a sort of circular saw at the tip of its proboscis which would enable it to enlarge any small abrasion of the skin and easily draw blood, thereby transmitting parasites to the blood of its victim. The majority of the species breed in dung, rotting animal or vegetable matter and must perforce carry on their feet the germs of such diseases as it is possible to transmit by those means. The genera *Musca*, *Calliphora*, *Lucilia*, and *Pyrellia* are cases in point. Grunberg wrote recently on the Stomoxyini and I have endeavoured to define the oriental species in a paper in which six new species are also described

Picard, Austen, Bezzi and de Meijere have each added species, so about 20 are now averred to be oriental though some seem to require corroboration Townsend is working through the Indian Museum Muscinae and his first paper has just appeared.[1] Biological and anatomical work has been done by Captains Patton and Cragg[2] and Mr Mitter.

Anthomyinae.—These form another great unexplored field except for a few papers by Stein[3] who erected nearly 100 species from New Guinea. mostly in *Mydaea*, *Spilogaster*, *Limnophora*, *Lispa*, *Caenosia* and *Atherigona*. A few species come from various authors. Of the good many species listed by Van der Wulp many of the descriptions are hopelessly inadequate and this fact coupled with the discovery that many are identical or practically so, with European forms may have caused authors to hesitate before tackling such an intricate group. I sent all my own oriental *Anthomyidae* to Prof. Stein several years before the war broke out but beyond his reply that they had safely arrived and that a cursory examination revealed the identity of some with European species. I have heard nothing of them since.

---

[1] Rec. Ind. Mus. XIII, 185 (1917).

[2] For papers on the Stomoxyini see Austen, Ann. Mag. Nat. Hist., 285 (1909); Grunberg, Zool. Anz. XXX, 78 (1906); Bezzi, Zeits. Hym. Dip., p. 413 (1907) and Rend. Istit. Lomb., 433 (1907): Mitter, Ind. Jour. Med Res. III (1915, 1916). Patton and Cragg. Ann. Trop. Med. and Paras. V (1912); Ind. Jour. Med. Res. I (1913). Brunetti, Rec. Ind. Mus.

[3] Term. Fuzet. XXIII, 129 (1900); Ann. Mus. Hung. VIII, 545 (1910).

Muscidae Acalyptrata.—About half the number of *Muscidae* (*s. latiss.*) are acalyptrate and the groups may be regarded for convenience sake as subfamilies, though many present writers give them all family rank. The order of these groups is somewhat optional but personally I like Van der Wulp's sequence as well as any and have followed it here, partly also because of greater ease in comparison, except that I prefer the older terms *Micropezinae* for *Calobatinae* and *Oscininae* for *Chloropinae.*

Cordylurinae.—The common European dung fly, *Scatophaga stercoraria*, L. has not been recorded from the East, yet I found it quite as common in Mussoorie and Darjeeling on various visits as at Wimbledon Common or Epping Forest at home.

Helomyzinae.—Of Walker's 20 species of *Helomyza*. Hendel refers no less than 13 of them to *Sapromyza.*

Sciomyzinae.—I have taken the very handsome and not uncommon European *Dryomyza formosa* at Mussoorie and it occurs at other hill stations Some notes on the Indian Sepedons were given by me some years ago, and one of my new species therein described ((*sanguinipes*) is synonymous with *javanensis*, Rob. Desv.

Micropezinae.—Several of the species of *Nerius* in Van der Wulp's Catalogue are erroneous and have been corrected by himself and Kertesz. The large genus *Calobata* badly requires careful revision after inspection of types

Sepsinae —This natural little group has been twice revised ; by de Meijere in 1904 who added 9 new species, and by me in 1909 with 17 new.

Diopsinae.—A limited and very peculiar group in which several changes of synonymy have been pointed out They are very conspicuous by the eyes being placed at the ends of longer or shorter stalks projecting from the head. A species sometimes occurs in vast numbers, the only one of which I have personal experience being *Sphyracephala hearsayana*, Westw. which within the space of a few days I found in profusion under a low arch over a roadside ditch in Cawnpore about 30-xi-04 and also in the old Residency at Lucknow 4-xii-04.

Ortalinae.—A very extensive group (filling 14 pages of Van der Wulp's Catalogue) which cuts up into several natural subdivisions. Many species are handsomely marked. It seems to me the genus *Dacus* is more akin to this group than to the *Trypetinae.* Bezzi revised this genus some time back; Hendel has done the same with the *Pyrgota* group and I am endeavouring to work out *Stenopterina.*

Trypetinae or fruit flies.—Bezzi has exhaustively monographed the Indian Museum collection in this family,[1] the text aided by three large plates of exceptionally good figures of wings from which it becomes a real pleasure to name specimens. A good many names are overturned as synonymic and but few species have been described since his work.

---

[1] Unfortunately under the inadmissible name of *Trypaneidae*, Mem. Ind. Mus. III, 53-175 (1913).

Sapromyzinae.—The world's species of this subfamily were recently compiled by Hendel in the Genera Insectorum, Fasc. 68 (1908), under the name of *Lauxaninae.* These endeavours to change family or subfamily names are unpardonable. The oriental species total about 150; Kertesz having set up over 40 in *Sapromyza* alone, mostly from Papua. The rest of the species since 1896 are about equally divided between Kertesz and de Meijere.

Celyphinae.—A small group of peculiar flies with the scutellum so enormously developed as to give the insects the appearance of small metallic blue or dull yellowish beetles.

The limits of the few alleged species appear somewhat hazy.

Psilinae, Borborinae, Ochthiphilinae, Ephydrinae, Agromyzinae.[1]—Hardly any progress has been made in these but the Indian Museum possesses a fair amount of undetermined material in the latter two groups.

Oscininae.—De Meijere and Becker jointly have produced an exhaustive treatise on the " *Chloropidae* of Java and the former author has described about 30 species in addition in separate papers.[2]

Geomyzinae.—About 50 new species, mostly by de Meijere have recently appeared, about half of them being in *Drosophila.*

Phoridae.—Brues revised this group in 1905,[3] setting up over 30 new species, mainly from India, Formosa and Papua, whilst Wandolleck, Schmitz and Aldrich have added a species or two each.

I treated of the group once, adding 10 new species. Later I gave a description of *Aphiochaeta ferruginea,* Brun. which for some time had been a *nomen nudum* only, and was figured in Lefroy's " Indian Insect Life." This species has been known to breed in the human intestines. Among the species described by Brues are several wingless forms some of which live in ants' nests. Dr. Annandale has described a very interesting new genus, *Rhynchomicropteron* from Ceylon,[4] while Schmitz[5] has discussed this and other myrmecophilous genera.

The alleged new family *Termitoxenidae* suggested by Wasmann for *Termitoxenia assmuthi* cannot sustain such rank.

Hippoboscidae.—Of the Pupipara about a dozen species of this family of parasitic diptera, mostly by Speiser, have been recently described.

---

[1] This is not the natural sequence of these groups but they are taken together here for the sake of convenience.

[2] Becher and de Meijere "Chloropiden aus Java," Tijd. v. Ent. LVI, 283 (1913).

[3] Gen. Insect. Fasc. 44 (1906).

[4] Spol. Zeyl. VIII, 85 (1913).

[5] Zool. Jahr., p. 509 (1914).

Nycteribiidae.—Speiser[1] has added 7 new species of these bat parasites, and de Meijere one. Of some of them no descriptions have been offered since the preliminary ones given in 1907. Mr. Hugh Scott has added to our knowledge of the Ceylon species.

◆

DECEMBER, 1918.

The Monthly General Meeting of the Society was held on Wednesday, the 4th December, 1918, at 9-15 P.M.

H. H. HAYDEN, ESQ., C.I.E., D.Sc., B.A., B.I., F.G.S., F.A.S.B., F.R.S., President, in the chair.

The following members were present:—

Dr. P. J. Brühl, Dr. W. A. K. Christie, Mr. H. C. Das Gupta, Dr. L. L. Fermor, Dr. F. H. Gravely, Mahamahopadhyaya Haraprasad Shastri, C.I.E., Dr. Satis Chandra Vidyabhusana, Mr. E. Vredenburg.

Visitor:—Mrs. L. L. Fermor.

The minutes of the last meeting were read and confirmed.

Nineteen presentations were announced.

The General Secretary reported the death of Mr. Robert John Pocock, an ordinary member of the Society.

The following gentleman was balloted for as an ordinary member:—

Sudhangsu Kumar Banerjee, Esq., D.Sc., Ghose Professor of Applied Mathematics, Calcutta University, proposed by the Hon. Justice Sir Asutosh Mookerjee, Kt., seconded by Prof. D. R. Bhandarkar.

The following papers were read:—

1. *The origin and ethnological significance of Indian boat designs.—By* JAMES HORNELL. *Communicated by the Anthropological Secretary.*

2. *On the identification of the ancient town of Tagara.—By* MD. ABDUL AZIZ. *Communicated by the Joint Philological Secretary.*

---

[1] Rec. Ind. Mus. I, 295 (1907).

3. *The occurrence of* CYPRŒA PIRIFORMIS *Gray, in the Mergui Archipelago* —*By* E. VREDENBURG.

4. *Two albino varieties of* CYPRŒA EROSA *Linnaeus.*—*By* E. VREDENBURG.

5. *The specific identity of the West-Indian* CYPRŒA HENIKERI *Sowerby, and of the East-Indian* CYPRŒA MURISIMILIS *Martin, with the description of a new species or variety,* CYPRŒA BLANDIANA, *and remarks on some related forms.*—*By* E. VREDENBURG.

The President announced that there would be no adjourned meeting of the Medical Section this month.

INDEX

JOURNAL AND PROCEEDINGS

ASIATIC SOCIETY OF BENGAL

VOLUME XIV

(NEW SERIES)

1918

INDEX

A

Abdur Raḥīm, 469.
abhāvavāda, 290–91.
Abul Fazl, 469, 470, 471.
Aedcomyia squammipenna, Arrib., ccclix. [341.
Aḥmad Shāh, Katak rupees of,
Aḥmad Shāh Valī, 464.
Ajāyūr (?) [Rājāpūr] mint, 344.
ākāṁkṣā-vāda, 324.
Akbar and Shāh Manṣūr, 274.
Akbar, his zeal for historical research, 469.
Akbarnāma, sources of, 469.
ākhyātā-vāda, 330–31. [464.
'Alā al-Dīn Ḥasan Bahman Shāh,
Alāu-d-Dīn Bahman Shāh, reign of, by H. M. Whittell, 475–76.
'Al vardī Khān, 341.
Amaranthus paniculatus Linn, 381.
Amir Khusrav of Dihlī, 467.
Anaimalais flora—dry semi-desert type, 382; dry deciduous hill type, 383; moist deciduous forest type, 383; ever-green type, 383; grass-land type 385.
Andropogon sorghum, *Brot.*, 381.
Aññatitthiya paribbājaka, 399.
Annual Address (1918), by H. H. Hayden, xviii-xxiv.
—— Report for 1917, ii–xviii.
anumiti-nirūpaṇa, 295–96.
anupalavdha-prāmāṇya-vāda, 290.
anuvyavasāya-vāda, 293–94.
anvaya-vyatireky anumāna, 311–12.
anyathā-khyāti, 285–86.
Aphiochaeta ferruginea, Brun., ccclxx.
Āppā Ṣāhib, 344.
apūrvva-vāda, 326–27.
Arabic and Persian MSS., cxcix.
arthapātti, 311.
Arthaśāstra, 402–3.
āsatti, 325.
Asiatic Society, List of Members of, xxviii-lii.
——, Receipts and Disbursements of, lvi-lxxiv
asiddha, 316.
āśray-āsiddha, 316
Atriadops nivea, ccclxv
ātūr, 'fire', 263.
Aurangzeb, coins of, 262, 474–75; Bijāpūr rupees of, 265; unpublished mint of, 260.
avayavāḥ, 312
A'zamnagar mint, coins of, 267.

B

Bābar's name, spelling of, by Maulavī 'Abdu'l Walī, 453–55.
Bādhita, 317–18
Bahman, king of the Kaiyānian dynasty, 271.
Bahmani dynasty of Kulbarga, 475
Bahmannāma, 271.
Bahrām, drachme of, 259.
Bajitpore, 221
Barclay Memorial Medal, recipients of, liii
Bdellolarynx sanguinolentus, Aust., ccclix
Bhavabhūti as a Mīmānsaka, by Dinesh Chandra Bhattacharyya, 245–46.
Bhonslay Rājās of Nāgpur, rupees of, 343.
Bibio obscuripennis, de Meij., ccclxi.
Bijāpūr rupees of Aurangzeb, 265.
Bismer Weighing-Beam from the Darjeeling District, by N. Annandale, 243–44.
Blazing Star, 224.
Boolchund (Bālchand Rāi), 223.
Brāhmaṇa-paribbājaka, 399.
Budgeerook Humeed Caune (Buzurg Umed Khān), 224.
Būrma, Tertiary history of, 409.
Burmese sesamum varieties—Notes on their variation and growth, by A. McKerral, 389–97.

C

Camptoceras austeni, 457.
—— *lineatum*, 457.
—— *terebra*, 457.

Cāṇakya, predecessors of, 402.
Cannabis sativa, Linn., 381.
Ceylonia magnifica, ccclxv.
Chalarus spurius, Fall, ccclxvii.
Charnock, Job, 223.
Charnockites and the Dharwars, by E. Vredenburg, 433–48.
—— stratigraphical relationships of, 436–40
Citsukha Muni, 245
Clavatula sacerdos, Reeve, 449.
——*sinuata*, Born, do.
Clement du Jardin, 221
Correction Note, by F. D. J. Paruck, 255–56
Cundegur, 222.

D

dāndishīr, 'weighing beam,' 243.
Daulat Shāh, 463, 465, 466.
Dharwars, 433.
dhātuvāda, 331.
Dīrghaścārāyaṇa, 402
Dolium galea, 449
—— *luteostoma*, Küster, 449
—— *variegatum*, Lamarck at Maskat, by E. Vredenburg, 449–52
Double monstrosity in the Chick, 333.
Dryomyza formosa, ccclxix.
Dyke-rocks, their connection with the Charnockites and Dharwars, 446–48.

E

Echis carinata, 380.
Elasticity, a new theorem in, 427.
Eleusine coracana, Gaertn., 381.
Elliot Gold medal and Cash, recipients of, lii–liii.
English merchants, flight of, 5.

F

Fathābād—Dhārūr mint, 346.
Fytche Nedham, 4.

G

Gadnārat (?) [Gadhākot] mint, 348.
Gāṅgeśa Upādhyāya, 279, 281–82.
Gangpūr (?) [Ganjīkot] mint, 349.
Garshāspnāma, 270.
Garshāsp of Sistan, 270.
Geotectonics of the Tertiary Irrawaddy Basin, by G. De P. Cotter, 409–20.
Gera Gaut (Ghorāghat), 220.
Gualla (Goula), 220.
Gulbadan Begam, 469.
Gulkanda mint, rupees of, 365–66.
Gulshanābād mint, 352.

H

Haldybary, 224.
Hæmatobia sanguisugens, Aust., ccclix.
Hammatorhina bella, Loew., ccclxi.
Hemitragus hylocrius, 380
Hernaraine Congoy of Bengal (Rāi Nanda Lāl, Kanungo of Bengal), 223.
Hernarraine Ray, 219.
hetu, 313.
hetv-ābhāsa, 314.
hetv-ābhāsa-nāma-sādhakatā-sādhakatva-nirūpaṇam, 319
hetv-ābhāsa-sāmānya nirukti, 314.
Hodge Zuffe Caun, (Hāji Safī Khān), 220
Hordeum vulgare, 249.
Hormazd II, drachme of, 253
Humāyūn, account of, 273.

I

Indian Science Congress (1918)—Fifth Session—Presidential Address by G. T. Walker, lxxv–xcviii.
—— Agriculture Section—Presidential Address, cii–cix.
—— Physics and Mathematics Section, Presidential Address, cxvi–cxxvii.
—— Zoology and Ethnography Section, Presidential Address, cxxxviii–cl.
—— Botany Section, Presidential Address, clvi–clxvii.
—— Geology Section, Presidential Address, clxxiii–clxxxiv.
—— Proceedings of, lxxv–clxxxvii.
Ipomœa Batatas Poir, 381.
Irrawaddy Basin—the Yoma forming a continually rising Geoanticline, 414; forming a continually sinking Geosyncline 415; sea retreated to the south, 417; ancient coastline, 417; recent upheaval, 418; age of the Anticlines, 419.
Isfarāyīn, 463.
Isolation of Porphyroxine, by Jitendra Nath Rakshit, 407-8.
Iśvar-ānumānam, 319.

J

Jahāngīr, gold Muhr of, 339.
Jaipāl, 466.

Jajia, **220.**
Janaka, king of Videha, 400.
Jeram (Jairam), 219.
Jñānanidhi, 245.

K

Kaibartagram, 220.
Karārābād mint, 354.
Katak rupees of Aḥmad Shāh, by S. H Hodivala, 341–44.
Kavān-i-dirafsh, 'the standard of the kings,' 257.
Kavī (*or Kavan*), 257.
Kavī babā, 257.
kevalānvayy anumāna, 310.
kevala-vyatireky-anumāna, 310.
Khān Bahādur Dīwān Faḍl-i-Rabbī Library, cci.
Khondalite series, its association with the Charnockite, 440–46.
Khusrau (Chosroes), drachme of, 254.
Khvāja 'Alī Malik, 463.
Khwāja Sultan Muḥammad, 276.
Kolar schists, 435.
Krorī Jam Shor Beg, 219.
Kulbarga, 475.
Kumārila Bhaṭṭa, 245.

L

Lachī Lanjī, Lakhī (?) [Kanjī] mint, **356.**
Lakhnau mint on a gold coin of Aurangzeb, by M. A. Suboor, **262.**
lakṣaṇā, 329.
Launaea aspleniifolia DC, 247.
Light, pressure of, 425.
Limnaea brevispira, von Martens, 460.
Lithotis japonica, 460.
Littleton, Edward, 4.
Lonchoptera lutea, Panz, ccclxvi.

M

Maḥmūd of Ghaznī, 466.
Mālatīmādhava, 245.
Malda Diary and Consultations (1680—82), by W. K. Firminger, 1-241.
Malda, town of, 1.
malkai, 'royal,' 257.
Mandū gold couplet, by S. H. Hodivala, 339–41.
Māngarh mint, 362.
mano-nutvavāda, 292–93.
Mas'aūd Majdūd, 271.
M. Sayyid Asad-Allāh Jalāl al Dīn Library, cci.
Maypore (Mahipore), 219.
Merchants, flight of English, 5.
Midradpore (Mirdadpur), 225.
Mir Jafar, 222.
Mithradates IV, drachme of, 377.
Mucdumpore (Makhdāmpur), 222.
Mughal coins, 473.
—— mints, 264.
[Muḥīābad]-Puna mint, 356.
Mungpu, weighing-beam from, 243.
Muscidae Acalyptrata, ccclxix.
Muxoodavad (Murshidabad), 224.

N

Nabob Spinder Chaan (Asfandiyar Khān), 221.
Naia bungurus, 380
Naṣīrābād mint, 260-61.
Nawab of Dacca Library, ccii.
New Theorem in Elasticity, by M. N. Saha, 421-23.
nigamana, 314.
nirvikalpa-vāda, 294.
Nishaun of Shasuja, 219
Note on the Taxonomic position of the genus *Camptoceras*, Benson and of *Lithotis japonica*, Pres., by N. Annandale and B. Prashad, 457–62.
Notes and suggestions about some unassigned or doubtful Mughal mints, by S. H. Hodivala, 344–72.
Notes on Important Arabic and Persian MSS. found in various Libraries in India (II), A. A. Suhrawardy, cxcix–ccclvi.
Notes on the Anatomy of a Double Monstrosity in the Chick, by D. R. Bhattacharya, 333–37
Novelties in Parthian coins, by F. D. J. Paruck, 372-78.
nūrā, 'fire,' 263
Nurdys, 221.
Nuṣratābād mint. 261
nyāya, 312.

O

Omia japonica, Pres., 460, 462.
Oriental Diptera during the last two decades, Progress in our knowledge of, by E Brunetti, ccclviii–ccclxxi.

P

pakṣatā, 308-9.
parāmarśa, 309–10.
parārth-ānumāna, 311–12.
Parivrājakas, two classes of, **399**; meaning of the term, **400.**

Parthian coins, novelties in, 372.
Pasenadi of Kosala, 402.
Pegu epoch, 410.
Persian and Arabic MSS., cxcix
Philaematomyia insignis, Aust., ccclix.
Phraates IV, drachme of, 375.
Pipunculus campestris, Latr., ccclxvii
Poet Shaikh Mufakhkhar-āl-dīn Āzarī of Isfarāyīn, by T. W. Haig, 463–68.
Poibandar or Parendā (?) mint, 368.
Porphyroxine, 407.
pramāṇa-catuṣṭaya-prāmāṇya-vāda, 331.
prāmāṇyavāda, 283–85.
pratijñā, 312.
pratyakṣa-kārana-vāda, 292.
Preliminary note on the Flora of Anaimalais, by C. Fischer, 379–88.
Pressure of Light, by M. N. Saha and S. Chakravarti, 425–32.
Proceedings of the Society's Annual Meeting (1918), i.
—— of the Society's Monthly General Meetings (1918), clxxxix-cxcviii.
—— of the Society's Monthly General Meetings, ccclvii-ccclxxii.
Puccinia butleri, 250.
—— *Butleri* syd., nov. spec., 247.
—— *triticina*, 249.
pūrva-pakṣa, 299.

Q

Quasi-Charnockites, 436.

R

Raghuji Bhonslay, 341.
Rajah Vajranāb, 272.
Rājās of Nāgpur, badge of, 344.
Rampore State Library, ccii.
Rare Sāsānian mint KVI BBA or KVN BBA, by F. D. J. Paruck, 256–60.
Rare type of drachme of Shāpūr II, by F. D J. Paruck, 262–64.
Rauẓat-uṭ-Tāhirīn, by H. Beveridge, 269–77.

S

śābda-bodha, 321–22.
śābda-nirūpaṇam, 321.
śabda-prāmāṇya vāda, 322–24.
śakti-vāda, 327–29.
sāmāny-ābhāva, 300-301
sāmānya-lakṣaṇā, 305.
sāmānya lakṣaṇā-siddhānta, 306.
samāsa-vāda, 329–30.
samavāya vāda, 289–90.
sannikarṣavāda, 286–89.
Sāsānian drachmes, 253
satpratipakṣita, 315–16.
savikalpaka-vāda, 294
savyabhicāra, 314–15.
Sayyid Abu'l Ḥasan Library, Murshidābād, cci.
Scatophaga stercoraria, L., ccclxix.
Scenopinus fenestralis, L., ccclxv.
Seerpore (Sherpur Murcha), 219.
Sesamum, as a food plant in Burma, 389.
—— classification of, 394–95; abnormalities, 395; its improvement, 395-96.
—— *indicum*, 389.
—— *laciniatum*, 389.
—— *prostratum*, 389.
—— its variation in characters, 390.
Shāhjahān, coins of, 473–74.
Shāh Manṣūr, 274
Shāhnāma, 464.
Shāh Rukh Sulṭān, 463.
Shah Suja, 219.
Shaikh Mufakhkhar āl dīn Āzarī, 463.
Shāistāh Khān, 4.
Shāpūr II, a gold coin of, 255, drachme of, 262.
Short account of the Wandering Teachers at the time of Buddha, by B. C. Law, 399–406.
siddhānta-lakṣaṇa, 300.
simha vyāghr-okta-vyāpti-lakṣaṇa, 298.
Simulium indicum, Becher, ccclxi.
—— *nobile*, de Meij, do
—— *striatum Brun.*, do
Sind, dynasty of, 272–73.
Some observations and experiments on the rust on *Launaea aspleniifolia* DC, by K. C. Mehta, 247–52.
Some rare Mughal coins, by H. Nevill, 473–75,
Some remarks on Mr. Hodivala's articles on certain Mughal mints, by C. J. Brown, 264–67.
Sources of the Akbarnāma, by H. Beveridge, 469–71.
Sphyracephala hearseyana, Westw, ccclxix.
Śramaṇa, meaning of the term, 400.

Srīnagar mint, 266.
Streynsham Master, 1.
Stygeromyia maculosa, Aust., ccclix.
Sultan Ḥusain, 274
svārth-ānumāna, 311.
svarūp āsiddha, 316.
Sydulapore (Sa'adu'llāhpur), 222.

T

Ṭāhir Muḥammed s. 'Imādu-dīn-Ḥasan, 269.
Tanda, 224.
Taqīu-d-dīn of Shushtar, 271.
tarka, 304-5.
tātparya, 325.
Tattva-cintāmaṇi—a most advanced work on Hindu Logic, by S. C. Vidyabhūṣaṇa, 279–331.
Tattvacintāmaṇi, its commentaries, 279–80; its author, 281–82; text, 283 ff.
Termitoxenia assmuthi, ccclxx
Tertiary Irrawaddy Basin, 409.
Tippū Sulṭān, 342
Tittillia, 219
Toxorhynchites immisericors, Walk., ccclix
Trenchfield, Richard, 4.
Triticum vulgare, 249.
Two rare Sāsānian drachmes, by F. D. J. Paruck, 253–55.

U

ucchanna-pracchanna-vāda, 325.
udāharaṇa, 313.
Uddālaka Āruṇi, 400.
Umvekā ārya, 245
Unpublished mint of Aurangzeb, by M. A. Suboor and H. Nevill, 260–61.
upādhi vāda, 306–8.
upamāna-khaṇḍa, 319–21.
upanaya, 313
upasarga vāda, 331.
Uredosori, 247.
Uredospores, 247.

V

vidhi-vāda, 326.
viruddha, 315.
viśeṣa-vyāpti,, 301–2.
vyadhikaraṇa-dharm-āvacchinn-ābhāva, 299
vyāpti-grah opāya, 302–3.
vyāpti-grah-opāya siddhānta, 303–4
vyāpti-pañcaka, 296–98
vyāpty-anugama, 305.
vyāpyatv āsiddha, 316–17.

W

Wandering Teachers, list of, 403–406.

Y

Yājñavalkya, 400.
yogyatā, 321–25.